IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

	§
	§
IN RE: MAXIM INTEGRATED	§ Master Docket
PRODUCTS, INC. MDL NO. 2354	§ Misc. No. 12-244
	§ MDL No. 2354
	§ CONTI, District Judge
This Document Relates to: All Actions	§
	§
	§

SPECIAL MASTER'S REPORT AND RECOMMENDATION
RE: CLAIM CONSTRUCTION

This claim construction Report and Recommendation analyzes the disputed claim terms of United States Patent Nos. 5,805,702 (the "'702 Patent"), 5,940,510 (the "'510 Patent"), 5,949,880 (the "'880 Patent"), 6,105,013 (the "'013 Patent"), and 6,237,095 (the "'095 Patent").[1] Defendants collectively filed consolidated claim construction briefing (Defendants are referred to as Opposing Parties and referenced herein as "OPs"). A subset of OPs, Bank of the West, Comerica, Inc. and BMO Harris Bank National Association, filed a separate claim construction brief as to the term "certificate" (the subset is referred to as Joining Parties and referenced herein as "JPs"). Some claim disputes are only relevant to Defendants Starbucks and Groupon (collectively referenced herein as "S/G"), and the other OPs express no opinion regarding those terms. Citation herein is made to the briefing in the action numbered 2:12-mc-00244: Maxim's Opening Brief (Dkt. 634), OPs' Responsive Brief (Dkt. 642), Maxim's Reply Brief (Dkt. 651), JPs' Responsive Brief (Dkt. 680), Maxim's Supplemental Brief as to "certificate" (Dkt.

---

[1] References to column and line numbers of the patents are made as 'XXX Patent at col:line.

686) and Maxim's Supplemental Brief as to "packet" (Dkt. 687). A claim construction Oral Hearing was held on September 12, 2013.[2] For the following reasons, the Special Master recommends the constructions set forth below.

BACKGROUND

The five patents-in-suit have priority dates in 1995 and 1996. The patents arose from the development by Dallas Semiconductor (the original assignee subsequently acquired by Maxim) of a product called the "iButton." The iButton was a small portable fob type device. The iButton was a combination of hardware and firmware that allowed merchants, banks and other service providers to provide in a secure encrypted manner a mechanism for a user to perform a variety of secure transactions. One application of the transactions allowed the iButton user to store and transfer data that included "digital cash" so that goods and services could be purchased through the use of the iButton. The technologies asserted by Maxim to infringe include smartphones and software "apps."

The patents have various relationships. The '880 Patent is a divisional of the '510 Patent. The '702 Patent, '013 Patent and '095 Patent all date back to a common provisional application filed September 29, 1995. The regular filing dates for each patent (either directly or through a parent application) all date to January 31, 1996. The '702 Patent, '013 Patent and '095 Patent share a substantially similar specification. The '013 Patent and '095 Patent incorporate by reference the '510 Patent. The '510 Patent and '880 Patent incorporate by reference the '702 Patent.

LEGAL STANDARDS

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995). The purpose of claim construction is to resolve the

---

[2] References to the Oral Hearing transcript are made as Tr. at xx.

meanings and technical scope of claim terms. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). When the parties dispute the scope of a claim term, "it is the court's duty to resolve it." *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313-14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification, and the prosecution history. *Phillips*, 415 F.3d at 1312-13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312-13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* at 315 (quoting *Markman*, 52 F.3d at 979). "[T]he specification 'is always highly

relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id*. (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex. Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys.*, Inc., 242 F.3d 1337, 1343-44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004). "The person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips*, 415 F.3d at 1313. Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." *Id*. at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id*. at 1314-17.

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.'" *Globetrotter Software, Inc. v. Elam*

Computer Group Inc., 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent"). The well established doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). "Indeed, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover." *Spectrum Int'l v. Sterilite Corp.*, 164 F.3d 1372, 1378-79 (Fed. Cir. 1988) (quotation omitted). "As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution." *Omega Eng'g, Inc.*, 334 F.3d at 1324. However, the prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance. *Middleton Inc. v. 3M Co.*, 311 F.3d 1384, 1388 (Fed. Cir. 2002). Statements will constitute disclaimer of scope only if they are "clear and unmistakable statements of disavowal." *See Cordis*

Corp. v. Medtronic Ave, Inc., 339 F.3d 1352, 1358 (Fed. Cir. 2003). An "ambiguous disavowal" will not suffice. *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010) (citation omitted). Because the file history "represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful in claim construction proceedings." *Phillips*, 415 F.3d at 1317. Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*

The doctrine of claim differentiation provides that "different words or phrases used in separate claims are presumed to indicate that the claims have different meaning and scope." *Seachange Intl. Inc., v. C-COR, Inc.*, 413 F.3d 1361, 1368 (Fed. Cir. 2005) (citing *Karlin Tech. Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971-72 (Fed. Cir. 1999)). However, the doctrine "only creates a presumption that each claim in a patent has a different scope; it is not a hard and fast rule of construction." *Id.* at 1369 (quoting *Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000)). The "claims cannot enlarge what is patented beyond what the inventor has described as the invention." *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1288 (Fed. Cir. 2009) (citations omitted).

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002) that a court should discern the ordinary

meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319-24. Still, though "less significant than the intrinsic record in determining the legally operative meaning of claim language," the Court may rely on extrinsic evidence to "shed useful light on the relevant art." *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful." *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. Whether a claim meets this definiteness requirement is a matter of law. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1344 (Fed. Cir. 2007). A party challenging the definiteness of a claim must show it is invalid by clear and convincing evidence. *Id.* at 1345.

"Only claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1250 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern

the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton,* 514 F.3d at 1249-50. The ultimate issue is whether someone working in the relevant technical field could understand the bounds of a claim. *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 783 (Fed. Cir. 2010).

> In determining whether that standard is met, i.e., whether the claims at issue are sufficiently precise to permit a potential competitor to determine whether or not he is infringing, we have not held that a claim is indefinite merely because it poses a difficult issue of claim construction. We engage in claim construction every day, and cases frequently present close questions of claim construction on which expert witnesses, trial courts, and even the judges of this court may disagree. Under a broad concept of indefiniteness, all but the clearest claim construction issues could be regarded as giving rise to invalidating indefiniteness in the claims at issue. But we have not adopted that approach to the law of indefiniteness. We have not insisted that claims be plain on their face in order to avoid condemnation for indefiniteness; rather, what we have asked is that the claims be amenable to construction, however difficult that task may be. If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds. . . . By finding claims indefinite only if reasonable efforts at claim construction prove futile, we accord respect to the statutory presumption of patent validity . . . and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.

Exxon Research & Eng'g Co. v. U.S., 265 F.3d 1371, 1375 (Fed. Cir. 2001) (citations and internal quotation marks omitted).

DISPUTED CLAM TERMS

1(a). "first data" ('510 Patent claim 1) [No. 12][3]

Maxim	OPs
plain meaning; if construction required; "a first/second data value"	"data that includes a value datum"

"first data" and "second data" ('095 Patent claim 1) [No. 12]

Maxim	OPs
plain meaning; if construction required; "a first/second data value"	"data that is used as money or its equivalent"

The dispute centers upon whether the claims are limited to money based applications.

Maxim

Maxim asserts that the terms are used in the '095 Patent in the context of "a first data object" and "a second data object." Maxim asserts that this references the use in the specifications of the term "data object" which means a data structure that can be used to hold a value. Dkt. 634 at 42 (citing '095 Patent at 17:5-8, 3:60-64 ("[t]hese objects 42 include both data objects (encryption keys, transaction counts, money amounts, date/time stamps, etc.") and…"), 17:45-19:46, 8:9-12 ("locked money object containing a given cash value")). Maxim asserts that in context of the claims the objects are a specific value associated with a secure transaction, such as an amount of money paid or a number of credits that are being passed, stored or adjusted.

At the Oral Hearing, Maxim emphasized that the '095 Patent was a divisional application from the '702 Patent. Maxim pointed out that that '702 Patent was subject to a restriction between Invention I "drawn to a method for adding a monetary equivalent to electronic equipment" and Invention II "drawn to a method for receiving and transmitting

---

[3] Claim term numbers refer to the numbers in the Joint Disputed Claim Terms Chart. Dkt. 677-1.

encrypted data." '702 File History JX-2 244MAX001382.[4] Maxim notes that the applicants subsequently filed the '095 divisional patent and explicitly canceled all claims but the Invention II claims. '095 File History JX-10 244MAX000300. Maxim notes that the '095 Patent claim 1 merely recites "encrypted data" in the preamble and "first" and "second" data object in the claims, in conformance with the Patent Office restriction. Maxim asserts it is thus improper to limit the '095 Patent claims to the monetary embodiments that the Patent Office stated were different inventions. Maxim also points to the Abstract and Technical Field of the Invention of the '095 Patent as the Abstract states that the encryption technique can be used "so that money and other valuable data can be securely passed" and the Technical Field of the Invention states that the module can "provide at least secure data transfers or to authorize monetary transactions." '095 Patent at Abstract; 1:23-28. Further, Maxim notes that '095 Patent dependent claim 7 states that "said first data object includes a base monetary amount and wherein said second data object includes a transaction monetary amount." Maxim asserts that claim differentiation thus supports Maxim's construction.

Maxim asserts that "value datum" is not contained in the '095 or '510 Patent claims or specifications. Maxim notes that "value datum" is contained in the '880 Patent claim 1. Maxim asserts that OPs inclusion of "value datum" limits the object to units having value that can be exchanged for goods or services. Maxim asserts that such a construction excludes the "Software Authorization and Usage Metering" embodiment in which the data object is not limited to money. Dkt. 634 at 43 (citing '095 Patent at 12:45-49).

---

[4] The file history citations are made to the Joint Exhibits utilized by the parties and referenced as JX-## and filed at Dkt. 634.

OPs

OPs assert that the summary of invention of the '510 Patent limits the "present invention … for communicating a cash equivalent electronically to and from a portable module" and that the module can be "filled with electronic money." '510 Patent at 1:59-67. OPs assert that the only "data" that is stored in the portable module in claim 1 is "first data," and thus the first data most have units of value that can be exchanged like cash equivalents. Dkt. 642 at 11. OPs assert that the specification states that a data packet stored in the module have "value (monetary value)" ('510 Patent at 7:21-27) and the data packet "could be referred to as a first data" ('510 Patent at 7:36-39, Figure 4 (encrypted data packet with "monetary value" is included in "data-one")). OPs assert these passages establish lexicography.

OPs also assert that all embodiments of the '510 Patent specification relate to electronic money or credit. Dkt. 642 at 12 (citing Example A (train fare) '510 Patent at 7:14-8:29 and Example B (ATM withdrawal) '510 Patent at 8:31-9:16). OPs also assert that in prosecution the applicants emphasized that issued claim 1 "allows a user to carry the portable module and install digital money equivalents into the module." '510 File History, JX-4 244MAX1122-23.

OPs assert that the '095 Patent Technical Field of Invention states "the present invention relates to…transferring money or its equivalent electronically." '095 Patent 1:24-26. OPs contrast this with the '013 Patent Field of Invention which is not limited to transferring money. OPs assert this intentional differentiation of the two applications (which date to two different priority documents filed on the same date) indicates a different scope of the patents. Dkt. 642 at 13, n. 11. OPs assert that the only item

transferred in '095 Patent claim 1 is the "certificate including…a second data object."

Thus, OPs assert the second data object must be the money equivalent. OPs also assert

that the "first data object" is adjusted according to the second data object, indicating that

the first data object is also a money equivalent. Dkt. 642 at 13.

OPs assert that the claims require (1) "a first memory for storing a first data

object," (2) "instructions" to "initiate generation of a certificate" including a "second data

object," and (3) instructions "to adjust said first data object according to said second data

object." OPs assert that only the money/value embodiments contain all three items. OPs

correlate the steps as (1) a money register ("first memory") for storing a money balance

("a first data object"), (2) generating a "certificate" include a payment or deposit amount

("the second data object") and (3) adjusting the money balance in view of the payment or

deposit. Dkt. 642 at 13-14 (providing extensive citations for each step).

As to the alternative embodiments cited by Maxim, OP asserts those are not

relevant as most of the embodiments do not include the three claimed steps – asserting

that embodiments II.A (secure email – no certificates), II.B (Digital Notary – no data

adjustment), II.J (subscription service – no certificates) and II.K (registry with key

security – no data adjustment) are thus not relevant to the claim at issue. Dkt. 642 at 14-

15, n. 15. As to embodiment II.G (software usage and metering), OPs assert that such an

embodiment relates to units of time which are money equivalents and stored in a "money

object" that is still exchangeable for services. Dkt. 642 at 14-15, n. 14 (citing '095 Patent

at 12:45-47).

Maxim asserts that the '095 Patent software usage embodiment is not limited to money but relates to units of time rather than the actual dollar amount.   Maxim also cites to the Registry With Guaranteed Private Key Security example as stating that it is not used for money or its equivalent:

> The model described here is one in which the authority to perform financial transactions derives from the registry maintained by the Service Provider. It is therefore essential that this information be accurate and that the private key in the module 10 can be secure from all parties. Because each module 10 has its own unique RSA key set, there is not provision in this model for module 10 to represent money independently of the registry maintained by the Service Provider.

'095 Patent at 16:1-10. Maxim also objects that OPs provide two different constructions for "first data" in two closely related patents. Maxim cites caselaw indicating that such different constructions should not be used absent compelling reasons. Dkt. 651 at 16.

Analysis

With regard to the '095 Patent, the claims, the specification and the file history each support Maxim's construction. As a starting point, the claims of the '095 Patent merely utilize the terminology "first data object" and "second data object." It is only in a dependent claim (claim 7) that the object is explicitly recited as a monetary amount. Further, passages that OPs assert state "the Invention" is limited to monetary amounts provide such language in a permissive manner, identifying other data in addition to money. Thus, as noted above the Abstract states "money and other valuable data" and the Field of Invention states "provide at least secure data transfers or to authorize monetary transactions. '095 Patent at Abstract; 1:23-28. Further, in the specification "objects" are used more generally. '095 Patent at 3:60-63. In addition, the "Software

Authorization and Usage Metering" embodiment provides disclosure for objects which relate to software usage time, not limited to money. '095 Patent at 12:45-49. Finally, the divisional file history of the '095 Patent and its parent '702 Patent provide clear guidance that the claims of the '095 Patent are not limited to monetary equivalents. '702 File History JX-2 244MAX001382; '095 File History JX-10 244MAX000300.

As to the '510 Patent, the claim term at issue arises in the context of "memory for storing a first data." As with the '095 Patent, such language is more generalized than asserted by OPs. OPs' assertion that as a matter of lexicography the patentees have re-defined "data" is not supported. A statement of lexicography must be clear. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Here OPs cite to a data packet stored in the module having "value (monetary value)" ('510 Patent at 7:21-27) and the data packet "could be referred to as a first data" ('510 Patent at 7:36-39). The statement that the data packet "could be" referred to as first data does not rise to the level of a clear statement of lexicography redefining "data." OPs also assert that all of the disclosed embodiments are limited to monetary value and thus "data" must be limited to monetary value. However, even if only a single embodiment exists the preferred embodiment is not inherently required to be read into the claims. *See Arlington Industries, Inc. v. Bridgeport Fittings, Inc.,* 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.") (internal citations omitted). Further, the '510 Patent incorporates by reference the '702 Patent. The '702 Patent includes a number of embodiments that involve transactions that are not limited to

14

monetary exchanges. For example secure email ('702 Patent at 4:45-6:23), digital notary service ('702 Patent at 6:25-7:50), Software Authorization and Usage Metering ('702 Patent at 12:30-13:5) and the Registry With Guaranteed Private Key Security ('702 Patent at 14:63-16:19) which discloses at 16:8-17 the concept of providing authority to perform financial transactions but the module itself does not "represent money independently of the registry maintained by the service provider." Thus, even OPs' single embodiment argument is contradicted by the specification. Finally OPs provide a file history argument. As to the File History statement, the Amendment cited as a whole does not limit the portable module as asserted by OPs. Note the Amendment starts be stating that the claim "claims a system for communicating data securely." Then a long recitation of the claim elements is provided also without any description of money. '510 File History JX-4 244MAX001122. Only then does the Amendment state that the system "allows a user" to use digital money. '*Id.* at 244MAX001122. When distinguishing the prior art the Amendment focuses on specific claim elements, again with no reference to money. *Id.* at 244MAX001123. The Amendment conclusion again focuses on merely communicating data securely with no money reference: "the present invention is an improvement over other systems for communicating data securely." *Id.* at 244MAX001123. When viewed in context of the entire Amendment, the one statement pulled out by OPs does not appear to be a disclaimer of the broader claim scope of the terms themselves and the broader statements provided elsewhere in the Amendment. Rather, the statement merely points to a usage that is allowed by the listed claimed structure and the Amendment focuses on those claim structures without limiting the claim to a monetary usage.

First data and second data as used in the '095 Patent claim 1 and first data as used in the '510 Patent claim 1 are not limited to money, monetary units or their equivalents.

It is recommended that "first data" and "second data" have their plain meaning, no construction required.

1(b). "units of exchange" and "value datum" ('880 Patent claim 1) [No. 34]

Maxim	OPs
plain meaning; if construction required; "units of exchange": not a limitation; "value datum": "data representing a value for a data object."	"units having value that can be exchanged as payment for goods and services"

Maxim

Maxim asserts that the plain meaning of "value datum" is value of data and that this conforms to the claim language which merely describes passing such data between various modules. Dkt. 634 at 51. Maxim asserts that OPs' construction renders a construction that "value datum" must constitute legal tender itself, rather than a simple variable representing an amount of the same. Maxim asserts that OPs' construction conflicts with the specification embodiments and Maxim states that value is "a representation of some unit of exchange – not a unit of exchange itself." Dkt. 634 at 51. Maxim points to '880 Patent at 10:23-25: "may be used to represent money or some other form of credit."

Maxim also asserts that the '880 Patent embodiment describes that when a money register is loaded, "a register within the secure module may be decremented by the same amount." '880 Patent at 8:65-9:2. Maxim asserts that the use of "may be" indicates that the register may be changed by a value that is not the "same amount" and thus indicates

that value datum is simply "data representing a value for a data object," not legal tender. Dkt. 634 at 52.

Maxim asserts the same arguments are relevant to "units of exchange" and in addition the term is not a limitation as it is only found in the preamble and preambles are assumed not to be limitations "absent any indication to the contrary in the claims, specification or prosecution history." Dkt. 634 at 52 (quoting *Symantec Corp., et al. v. Computer Associates International, Inc. et al.,* 522 F.3d 1279, 1289 (Fed. Cir. 2008).

At the Oral Hearing, Maxim asserted that it agreed with the construction proposed by the Special Master: "value datum" means "data representing a value for money, credit or other items that can be exchanged as payment for goods or services." Tr. 38.

OPs

OPs assert that the preamble provides antecedent basis for "first module" and "second module" and thus the preamble is limiting since it provides antecedent basis. Dkt. 642 at 7 (citing *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.,* 289 F.3d 801, 808 (Fed. Cir. 2002)).

OPs assert that "value datum" does not have a plain meaning, is not a term of art and does not appear in dictionaries. Dkt. 642 at 8. OPs assert that the preamble refers to "transferring units of exchange" and the only item transferred in the claim elements is the "value datums." OPs thus assert that "value datum" is a unit of exchange. OPs further assert that the specification consistently states that "the present invention" relates to transactions involving the transfer of money or value:

> The present invention is an apparatus, system and method for communicating a cash equivalent electronically to and from a portable module. The portable module can be used as a cash equivalent when buying products and services in the market place.

17

'510/'880 Patent at 1:59-2:5. OPs assert that the claimed "portable module" can be:

> filled with electronic money at an add-money station, and be debited by a merchant when a product or service is purchased by the consumer. As a result of a purchase, the merchant's cash drawer will indicate an increase in cash value.

'510/'880 Patent at 1:67-2:5. OPs also state the "Technical Field of the Invention" section states:

> [t]he present invention relates to transferring units of value between a microprocessor based secure module and other module used for carrying a monetary equivalent.

'510/'880 Patent at 1:20-26. OPs also assert that the "Description of Related Art" section notes that credit cards were limited because "the magnetic strips installed in [those] credit cards" did "not enable the card to be used as cash" and thus a merchant could not "receive cash at the time of the [credit] transaction." '510/'880 Patent at 1:41-45. OPs assert that the patent then noted "there is a need for an electronic system that allows a consumer to fill an electronic module with a cash equivalent in the same way a consumer fills his wallet with cash," so that "[w]hen the consumer" makes a purchase, the "merchant's cash drawer can be credited without any further transactions with a bank or service provider." '510/'880 Patent at 1:49-55.

OPs assert these "present invention" statements are limiting. Further, OPs assert that every embodiment of the '880 Patent relates to money or value to be stored or transferred from the module. Dkt. 642 at 9 (citing Example A and Example B, '880 Patent at Figures 4 and 5, 7:13-8:30 and 8:32-9:16.

OPs assert that the patent figures make clear that the "value datum" constitutes actual monetary value and not merely a representation of value. OPs state that Figures 4

and 5 indicate that a packet with "monetary value" is stored. OPs further assert that the prosecution history is relevant as the applicants stated the invention "allows a user to carry the portable module and install digital money equivalents into the module and spend or cash the portable digits at locations that have a portable module reader." '510 File History JX-4 244MAX1122-23.

OPs assert that Maxim's construction conflicts with the specification because every embodiment of value datum has actual value. OPs assert that Maxim citation to the definition of the "Money Register" (arguing that representation of value is sufficient) is not relevant because the Money Register is the object that is used to store units of exchange and is not the unit of exchange itself. Dkt. 642 at 10. OPs assert that the data within the money register does not simply represent value, it has actual value.

At the Oral Hearing, OPs asserted that OPs agreed to the construction proposed by the Special Master: "value datum" means "data representing a value for money, credit or other items that can be exchanged as payment for goods or services," with one caveat. The caveat raised by OPs was that they could agree if the value is the data itself such that the data has value as opposed to the value just being a bank statement. Tr. at 27-29. Thus OPs agreed to the construction if it was clear that the data has value.

Analysis

Generally, a preamble is not considered a limitation of the claim.

> It is well settled that if the body of the claim sets out the complete invention, and the preamble is not necessary to give life, meaning and vitality to the claim, then the preamble is of no significance to claim construction because it cannot be said to constitute or explain a claim limitation. (Internal quotations ommitted).

Schumer v. Lab. Computer Sys., Inc., 308 F.3d 1304, 1310 (Fed. Cir. 2002). Thus, where the deletion of the preamble phrase in question does not affect the structure or steps of the claimed invention, the phrase is not limiting. *Am. Med. Sys., Inc. v. Biolitec, Inc*., 618 F. 3d 1354, 1358-59 (Fed. Cir. 2010). However, a preamble is properly considered a limitation of a claim "if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 239 F.3d 801, 808 (Fed. Cir. 2001).

Though the preamble in question provides antecedent basis for the "first module" and "second module," the term in question is the units of exchange. The claim steps of the method claim themselves provide a complete method without resort to the preamble. The claims limitations themselves describe "passing a first value datum from said first module and the electronic device" and "passing the first value datum from said electronic device to said second module." Thus, the preamble which describes "transferring units of exchange between a first module and a second module" is not needed to add "life and meaning" to the claim or to complete the claim.

As to the term "value datum," the parties appear close to agreement, though OPs requested the insertion of commas such that the construction reads "data, representing…, that can be exchanged as payment for goods and services." Tr. at 27. It is unclear if Maxim's agreement was meant to preserve an interpretation of "represents" in which the "value datum" just displays some monetary amount, such as a bank statement. The recommendation clarifies that "value datum" as used in the patent does not extend to merely displaying some data but rather that "value datum" has value itself.

"Value datum" is not a term of ordinary usage and the specification does not explicitly use the term outside of the claims so the disclosure in the specification is particularly relevant. As used in the specification the value datum is not merely something such as a bank statement but is something that can be exchanged for goods or services. Thus "value" is used in the context of "units of value" ('880 Patent at 1:26), "cash value" (*Id.* at 2:6), "value of the accepted currency" (*Id.* at 3:5-6), "the amount of value (the monetary value)" (*Id.* at 7:25-26), "the amount of value to be debited from the portable token (the train fare)" (*Id.* at 7:41-42), "the first value, the train fare" (*Id.* at 7:63, 7:67), "the reduced monetary value of the portable module" (*Id.* at 8:5) and "monetary value" (*Id.* at 8:38-9:7). In context of the usage in the intrinsic record, value datum relates to something that can be exchanged for goods or services, but as noted it does not have to be money itself but could "represent" money or some other form of credit. *Id.* at 10:23-25 (the money register "may be used to represent money or some other form of credit"). Thus the value datum need not be money itself but the representation still being something that is of the nature that can be exchanged for goods or services. The recommended construction clarifies that the "value datum" can be exchanged for goods or services.

It is recommended that "unit of exchange" need not be construed as the term is not limiting since it is found in the preamble. It is recommended that "value datum" means "data that can be exchanged as payment for goods and services, the data representing a value for money, credit or other items."

1(c). "first portable module" ('510 Patent claim 1) [No. 13]

Maxim	OPs
plain meaning; if construction required; "a portable assembly"	"a read and write data carrier that can be filled with and used for carrying digital cash"

The inclusion of "digital cash" is the focus of the argument.

Maxim

Maxim asserts that the term is readily understandable and that claim 1 provides details as to what forms the "first portable module": memory, real time clock, counter, input/output circuit, ID number, and memory with further details regarding each sub-element. Maxim asserts that in this context claim 1 should be used to determine the requirements of "first portable module." Dkt. 634 at 54. Maxim asserts that OPs are merely attempting to improperly incorporate a particular embodiment. Maxim asserts that OPs' extraneous limitations have nothing to do with the terms "portable" or "module" but instead substitute in place of these easily understood terms concepts that would need further construction: "read and write data carrier" and "filled with and used for carrying digital cash." Dkt 634 at 55. Maxim asserts that the specification (columns 3 and 4) describes the various components that can be used to implement the portable module, the very components contained in the claim.

OPs

OPs assert that the '510 Patent relates to a system to exchange units having value as payment for goods or services. OPs assert that the specification describes the "present invention" numerous times with regard to the transfer of payment. Dkt. 642 at 17 (citing '510 1:21-26, 1:59-2:4, 3:16-21, 3:41-53, 5:23-27, 7:14-20, 8:16-21). OPs also cite to a prosecution history statement: "[t]he system for communicating data securely, as

discussed in the specification, allows a user to carry the portable module and install digital money equivalents into the module and spend or cash the portable digits at locations that have a portable reader." '510 File History JX-4 244MAX1122-23. OPs assert that only after this argument was claim 1 allowed.

Analysis

The claim itself provides extensive details as to what the claimed "portable module" is. In particular, the claim recites five separate elements that form the portable module with further limitations regarding most of those separate elements. The claim itself is the best representation of what is a portable module. Furthermore, many of the arguments raised by OPs are substantially similar to those raised above with regard to "first data" and to the usage of that term in the '510 Patent. The same reasons for rejecting OPs' construction with regard to that term provide additional reasons for rejecting OPs' construction of "first portable module."

It is recommended that "first portable module" is construed as "plain meaning, no further construction necessary." The remainder of the claim elements further define "first portable module."

2. "portable module reader that can be placed in communication with said first portable module" ('510 Patent claim 1) [No. 21]

Maxim	OPs
plain meaning; if construction required; "a device that can be placed in communication with the first portable module"	"a device that can be touched to the portable module, or placed near it, to extract data from the portable module"

The primary issues raised by the parties relate to the touching / proximity limitations proposed by OPs. In OPs' Response Brief (Dkt. 642 at 19, n.19), OPs suggests using the phrase "read data from the portable module" as a substitute for

"extract data from the portable module." At the Oral Hearing Maxim stated it had no objection to the use of "read data from the portable module." Tr. at 51.

Maxim

Maxim argues that the specification is clear that communication is not limited to a particular type or proximity:

> [i]t is understood that the means for communicating 106 is not limited to a single wire connection. The communication means 106 could be multiple wires, a wireless communication system, infrared light, any electromagnetic means, a magnetic technique, or any other similar technique.

'510 Patent at 2:54-58. Maxim further points to the specification statement:

> [i]t is understood that the input/output circuitry 26 of the secure device 108 can be designed to operate on a single wire, a plurality of wires or any means for communicating information between the secure module 108 and the microprocessor based device 104.

'510 Patent at 5:12-16. Finally, the '702 Patent (incorporated by reference into the '510 Patent) includes the statement that "[t]he transactions described…above could also be performed over a network, allowing a physical separation between the Merchant, End User, and modules." '702 Patent at 11:45-48.

OPs

OPs assert that the claim uses the term "placed" which implies touching or near proximity. OPs assert that Maxim's construction avoids the import and impact of "placed." Dkt. 642 at 19. OPs assert that the only reader device disclosed in the '510 Patent is a credit card reader. Dkt. 642 at 19 (citing '510 Patent at 1:28-48, 3:14-21, claim 2). OPs assert this demonstrates the intent to require physical contact or close proximity.

OPs assert that "placed in communication" requires a positive action of the user placing the module in contact or near module. OPs assert that the specification confirms the use of "placed" as a location with the statement "[i]t is understood that an exemplary secure module can be placed in virtually any articulatable item. Examples of articulatable items include credit cards, rings, watches, wallets, purses, necklaces, jewelry, ID badges, pens, clipboards, etc." '510 Patent at 23:9-15.

OPs also assert that the prosecution history emphasized location since the:

> [s]ystem for communicating data securely, as discussed in the specification, allows a user to carry the portable module and install digital money equivalents into the module and spend or cash the portable digits at locations that have a portable module reader.

'510 file history JX-4 244MAX1122-23. OPs also assert that the examples disclosed in the specification all require touch ("a single wire or contact connection" '510 Patent at 2:46-48, 4:17-19) or proximity ("multiple wires," "infrared light," "light," and "magnetic technique" '510 Patent at 2:55-58, 4:21-24). OPs assert that the other techniques ("wireless" and "electromagnetic") do not necessarily require proximity but are not inconsistent with proximity. Dkt. 642 at 21. OPs assert that the specification fails to teach any details of a wireless communication system and how it is implemented and thus nothing shows that the applicants understood how to implement such a system. At the Oral Hearing, OPs also asserted that the claim could not claim more than was disclosed and enabled. OPs assert that the claim should thus be limited to touching or close proximity.

Analysis

OPs' argument that "placed" is limited to physically placement in close proximity conforms to one possible interpretation that could be accorded to "placed." However, *Phillips* counsels the importance of the specification. The specification explicitly lists a variety mechanisms including "wireless communication system" and then states "or any other similar technique." '510 Patent at 2:55-58. Further the specification states that the communication means may be "any means for communicating information between the secure module 108 and the microprocessor based device 104." '510 Patent at 5:14-16. The specification therefore supports a broader reading of "placing" then asserted by OPs and explicitly teaches one skilled in the art that wireless or other communication methods may be utilized. The teaching of the '510 Patent specification thus contradicts the limitation sought be OPs. Further, the '702 Patent (incorporated by reference into the '510 Patent) includes the statement that "[t]he transactions described…above could also be performed over a network, allowing a physical separation between the Merchant, End User, and modules." '702 Patent at 11:45-48. The teaching of the '702 Patent therefore also contradicts the limitation sought be OPs. A construction that excludes disclosed embodiments is generally disfavored. *In re Katz*, 639 F.3d 1303, 1324 (Fed. Cir. 2011) ("[T]here is a strong presumption against a claim construction that excludes a disclosed embodiment."). The teachings of the specifications thus do not limit "placed" to a physical location in contact or close proximity.

It is recommended that "portable module reader that can be placed in communication with said first portable module" means "a device that can be placed

in communication with the first portable module to read data from the portable

module.”

3. "microcontroller" ('510 Patent claim 1; '013 Patent claims 1 and 9) [No. 16]

Maxim	OPs
'013 Patent claim 9: not limiting separately from "microcontroller core"; '510 Patent claim 1, '013 Patent claim 1: "microcontroller" in "microcontroller based" is not limiting, but if construction is required: "a processor, memory, and input/output"	"a single-chip integrated hardwire circuit, including a central processing unit, addressable memory, and input/output peripherals that communicate data externally to a microcontroller-based system, used for a single purpose in embedded applications"

The parties dispute whether the components of the microcontroller must be on a single integrated circuit and whether the microcontroller must be used for a single purpose embedded application.

Maxim

Maxim asserts its construction conforms to the understanding of one skilled in the art. Dkt. 634 at 38. Maxim asserts that the specification describes the microcontroller as a general purpose device: "general-purpose, 8051-compatible micro controller 12 or reasonable similar product." '013 Patent at 3:21-23. Maxim objects to OPs' limitation to a particular single use embedded application. Dkt. 634 at 39. Maxim asserts OPs' construction contradicts the specification description which describes the Service Providers providing their programs ('013 Patent at 3:56-4:4) and the disclosures of various embodiments for secure email, digital notary, digital cash dispenser, software authorization and usage metering, postal metering, etc. ('013 Patent at 5:1-17:5).

Maxim points to the '013 Patent Figure 1 and '510 Patent Figure 3 which illustrate a separate microprocessor 12 (also called a microcontroller 12 in the '013 Patent

at 3:21-23) and separate memory 20 for program storage. '013 Patent at Figure 1, 2:34-65. Maxim also notes that the '013 Patent (which is incorporated by reference into the '510 Patent) further states that the devices of the module shown in Figure 1 may be "on multiple integrated or descrete [sic] element circuits combined together." '013 Patent at 2:38-39. Maxim asserts that the disclosure that states an 8051 compatible micro controller or reasonable similar product would teach one in the art that any of the numerous microcontrollers known at the time that utilized external program memory could be utilized. Dkt. 634 at 40-41. Maxim asserts that thus it would be known that a microcontroller merely includes a processor, memory (not necessarily program memory) and input/output. Dkt. 634 at 41.

Maxim objects to OPs' inclusion of "addressable" memory. Maxim notes that OP provides no definition of what "addressable" means and cites to no intrinsic or extrinsic evidence for such term other than a purported admission by Maxim's expert. Dkt. 651 at 14. Maxim also objects to OPs' lack of citation of evidence that there must be input/output peripherals that "communicate data externally to a microcontroller-based system."

OPs

OPs assert that it is well known (and agreed by Maxim's expert) that a microcontroller is a single chip circuit that includes a CPU, memory and I/O peripherals. Dkt. 642 at 48. OPs cite to an extrinsic evidence dictionary to assert that a micro-controller is used for a single specific purpose. Dkt. 642 at 48. OPs assert that the '510 and '013 Patent specifications disclose special purpose devices and only illustrate examples of embedded applications provided by a service provider. Dkt. 642 at 48. As

to "general purpose," OPs assert that such term merely means that the microcontroller may be configured for one of a variety of embedded applications run by the module. Dkt. 642 at 49.

Analysis:

The specification describes a general purpose microcontroller: "general-purpose, 8051-compatible micro controller 12 or reasonable similar product." '013 Patent at 3:21-23. The specification describes a separate program memory 20 and the specification teaches that the micro controller 12 may be used for a variety of uses and applications. Thus, the specification teaches that a micro controller may be a general purpose device and may be used for differing applications. '013 Patent at 5:1-17:5. OPs have not pointed to anything in the intrinsic or extrinsic record evidencing that a micro controller could not be used for more than one application. At the Oral Hearing, OPs emphasized that the specification only taught embodiments in which one application was utilized. Tr. at 57. However, OPs did not provide evidence that a micro controller must be limited to one application and OPs did not point to evidence in the intrinsic record that mandates a microcontroller must be utilized only for a single embodiment. At most, OPs point to a disclosure in which many differing applications are provided singularly on a microcontroller. The specification makes clear that the microcontroller may be a "general purpose" controller and thus OPs attempt to limit the ordinary meaning of the term microcontroller is not supported by the specification.

As to whether the "microcontroller" is an integrated hardware circuit, at the Oral Hearing, Maxim acknowledged that the ordinary meaning of "micro controller" was "at the relevant time I think it was often a single chip certainly, often an integrated circuit."

Tr. at 55. At the Oral Hearing Maxim asserted that the specification, however, did not mandate an integrated hardware circuit. Tr. at 55-56.

The specification discloses a module having a "microprocessor" 12 and that such a device is "general-purpose, 8051-compatible micro controller 12 or reasonable similar product." '013 Patent at Figure 1, 3:21-23; '510 Patent at Figure 3. Neither party asserted that an 8051 micro controller would be known to one skilled in the art to be anything other than an integrated hardware circuit. Thus, the specification conforms to what even Maxim acknowledged the term often "certainly" was. As the specification conforms to such a meaning, the inclusion of the integrated limitation sought by OPs is proper.

The construction recommended for "microcontroller" is "an integrated hardware circuit including a processor, memory, and input/output."

4. "math coprocessor…for processing encryption calculations" (510, claim 1); "math coprocessor…for handling complex mathematics of encryption and decryption" ('013 Patent claim 1) [No. 7]
"modular exponentiation accelerator circuit…for performing encryption and decryption calculations" ('013 Patent claim 9) [No. 8]

Maxim	OPs
510, claim 1: "a processor that works with another processor processing complex mathematics of encryption" 013, claim 1: "a processor that works with another processor handling complex mathematics of encryption and decryption" 013, claim 9: "a processor that works with another processor handling complex mathematics of modular exponentiation and encryption and decryption calculations"	"a processor that is distinct from and works concurrently with the microcontroller core and is dedicated to handling the complex mathematics of modular exponentiation for encryption and decryption"

"coprocessor circuit" ('095 Patent claim 1) [No. 6]

Maxim	OPs
"a processor that works with another processor"	"a processor circuit that is distinct from and works concurrently with the microprocessor circuit"

The primary issues are whether it is appropriate to include in the constructions "distinct from," "work concurrently," "dedicated," "handling modular exponentiation," and whether '510 Patent claim 1 requires both encryption and decryption.

Maxim

Maxim asserts that the claims themselves do not include the limitations sought by OPs. Maxim asserts that the specification does not require such limitations. Maxim asserts that "modular exponentiation" is merely a preferred embodiment. Maxim asserts that the other embodiments describe the math coprocessor in the context of being "used to handle very large numbers." '013 Patent at 2:54-57; '510 Patent at 4:61-65. Maxim asserts that though the modular exponentiation example is described, the specification states that "other types of math intensive encryption or decryption techniques" could be utilized. '510 Patent at 4:61-65; '013 Patent at 30:1-4 ("a numeric coprocessor optimized for math intensive encryption"). Maxim asserts that OPs are thus improperly incorporating a preferred embodiment into the claims. Maxim also asserts that the use in some claims of "math coprocessor" and in other claims "modular exponentiation" is further indicative that the terms were not meant to carry the same meaning. Dkt. 634 at 12-13.

Maxim also asserts that to the extent that "distinct from" means "discrete," such a meaning is in direct contradiction to the specification which teaches that all the claimed

circuitry may be formed on a single integrated circuit. Dkt. 634 at 12 (citing '013 Patent at Figure 1, 2:34-39, 3:33-40. 29:65-30:4; '510 Patent at Figure 3, 4:25-28, 5:50-57, 23:15-23). Maxim also asserts that extrinsic evidence also establishes that at the time of the invention it was known that math coprocessors could be built into a processor or could be separate integrated circuits. Maxim similarly asserts that the extrinsic evidence shows that a coprocessor need not operate concurrently but rather the other processor may merely wait for a result from a coprocessor. Dkt. 634 at 14. Finally Maxim asserts that the extrinsic evidence shows that a math coprocessor need not be dedicated to a specific function, excluding all other functions, as it was known that math coprocessors could be used to speed up math and graphics functions. Dkt. 634 at 14.

OPs

As to "distinct,' OPs assert Maxim refers to "another processor" in its constructions. OPs also note that the claims provide the terms as separate claim elements and consistently describe the coprocessors as structurally separate in the specification. Dkt. 642 at 26. As to "concurrent," OPs assert that Maxim's assertion that the coprocessor may wait or operate concurrently reflects the concept that coprocessors have the ability to operate concurrently. OPs cite their expert for the proposition that the term "coprocessor" means that the coprocessor works concurrently with another processor. Dkt. 642 at 26.

OPs assert that the term "modular exponentiation accelerator" is used interchangeable in the specification with "math coprocessor" and "numeric coprocessor." Dkt. 642 at 26-27. OPs assert that excluding the "dedicated," "modular exponentiation" and "encryption and decryption" limitations would render a generic definition of "math

coprocessor" that is unsupported by the intrinsic record. OPs cite to a prosecution statement in the '510 Patent in which the applicants argued that a cited reference "does not include a secure microcontroller having a dedicated math co-processor." Dkt. 642 at 27 (quoting '510 File History JX-4 244MAX1123). OPs assert the '013 Patent claims must also be dedicated coprocessors as the specifications make clear that the coprocessors of the '013 Patent are the same as the coprocessor of the '510 Patent.

As to "modular exponentiation," OPs assert their construction is supported by the statement "a high-speed modular exponentiation accelerator for large integers (math coprocessor) 18." '013 Patent at 3:24-26. The OPs also cite to a Patent Examiner statement that stated "the math coprocessor is defined in the disclosure as being a high speed modular exponentiation accelerator." Dkt. 642 at 28-29 (quoting '013 File History, JX-8, 244MAX620). OPs assert that the passages cited by Maxim plainly refer back to "math coprocessor 18" which is defined as "modular exponentiation accelerator for large integers (math coprocessor) 18." '510 Patent at 5:11-42; '013 Patent at 3:23-25.

OPs also assert that the specification plainly states that the '510 coprocessor performs encryption and decryption. Dkt. 642 at 29 (citing numerous examples of decryption). OPs also assert that the Patent Office rejected the argument that encryption does not require decryption when it stated that "encryption schemes incorporate both an encryption function and a corresponding decryption function." Dkt. 642 at 29 (citing '095 File History, JX-10, 244MAX334).

Maxim Reply

Maxim asserts that in deposition testimony OPs' expert could not describe what it means for a processor to work "concurrently" and thus a jury would also not be able

understand what such requirement means. Dkt. 651 at 4-5. Maxim asserts that OPs'

expert stated that "works concurrently" does not mean "works in parallel," further adding

to the confusion. Dkt. 651 at 5. Maxim cites to its expert statement that coprocessor

acceleration could be accomplish just by having a coprocessor that runs faster than the

primary processor, even if not working in parallel. Dkt. 651 at 5.

Maxim again asserts that some claims use "modular exponentiation" and some do

not (only using "math coprocessor"), indicative that all claims are not so limited.   Maxim

asserts that OPs ignore the clear statement that "other types" of math techniques may be

used:

> The math coprocessor circuitry 18 is designed and used to handle very
> large numbers. In particular, the coprocessor will handle the complex
> mathematics of RSA encryption and decryption or other types of math
> intensive encryption or decryption techniques.

'510 Patent at 4:62-65. As to the prosecution statement, Maxim asserts the statement is

not a clear disavowal and at most it indicates that the processor is dedicated to math, not

the construction proposed by OPs.

Analysis

The arguments provided by Maxim are more persuasive. The claims are the

starting point for analysis. *See Phillips,* 415 F.3d at 1314-1315. Some claims use "math

coprocessor" and some claims use "modular exponentiation accelerator circuit,"

indicative of differing meanings. OPs do not assert that an ordinary meaning of "math

coprocessor" requires "modular exponentiation accelerator circuit." Rather OPs point to

embodiments in the specification in which the math coprocessor is a modular

exponentiation accelerator circuit. The parenthetical reference relied upon by OPs for

"modular exponentiation accelerator" establishes that such structure is a math

34

coprocessor but does not mandate that all math coprocessors need be a modular exponentiation accelerator. In contrast, the specification makes clear that "math coprocessor" is not limited as sought by OPs:

> The math coprocessor circuitry 18 is designed and used to handle very large numbers. In particular, the coprocessor will handle the complex mathematics of RSA encryption and decryption or other types of math intensive encryption or decryption techniques.

'510 Patent at 4:62-65. Likewise in the '013 Patent the math coprocessor is described more broadly as "designed and used to handle very large numbers" ('013 Patent at 2:54-57) and "a numeric coprocessor optimized for math intensive encryption" ('013 Patent at 30:1-2). In light of the clear specification disclosure, the file history statement made by the Examiner carries less weight. *See Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1124 (Fed. Cir. 2004) ("It is well settled, however, that it is the applicant, not the examiner who must give up or disclaim subject matter that would otherwise fall within the scope of the claims). Similarly, OPs' "distinct" requirement conflicts with disclosures within the specifications. For example the specification provides numerous teachings that circuitry disclosed preferably may all be integrated within a single integrated circuit. '013 Patent at Figure 1, 2:34-39, 3:33-40, 29:65-30:4; '510 Patent at Figure 3, 4:25-28, 5:50-57, 23:15-23. As to the "concurrent" requirement, OPs have not pointed to language within the specification mandating such a limitation. OPs assert that Maxim's "working with another processor" is the same as "concurrently," however, as noted by Maxim "concurrently" provides a simultaneous requirement not found in the specification. Maxim has pointed out that a math coprocessor may work with another processor to enhance performance and speed without mandating a "concurrent" operation.

As to the operations that the coprocessor performs, the claims themselves require either encryption, encryption and decryption, or modular exponentiation. OPs have not provided citation to the specification to override the explicit claim language.

With regard to the "dedicated" term and the file history, OPs seek a requirement that the math coprocessor is dedicated to handling modular exponentiation mathematics. However, the file history statement does not make such an assertion. '510 File History JX-4 244MAX00123. Further, file history arguments by nature are often less clear. *Phillips,* 415 F.3d at 1317 (noting that the prosecution history represents an "ongoing negotiation" and "often lacks the clarity of the specification"). For example, the statement appears to be more directed towards emphasizing that the coprocessor is directed toward math, a concept that conforms to the specification.

The disputes between the parties with regard to "coprocessor circuit" relate to OPs' inclusion of "distinct from" and "concurrently." The parties merely point to the arguments with regard to the "math coprocessor" terms to support their positions. The reasoning stated above for the "math coprocessor" terms also applies to the "coprocessor circuit" term.

The recommended construction for "math coprocessor…for processing encryption calculations" ('510 Patent claim 1 [No. 7]) is "a processor that works with another processor processing complex mathematics of encryption." The recommend construction for "math coprocessor…for handling complex mathematics of encryption and decryption" ('013 Patent claim 1 [No. 7]) is "a processor that works with another processor handling complex mathematics of encryption and decryption." The recommend construction for "modular

exponentiation accelerator circuit…for performing encryption and decryption calculations" ('013 Patent claim 9 [No. 8]) is "a processor that works with another processor handling complex mathematics of modular exponentiation and encryption and decryption calculations." The recommended construction for "coprocessor circuit" ('095 Patent claim 1 [No. 6]) is "a processor that works with another processor."

5. **"real time clock circuit" ('510 Patent claim 1)[5]; "real time clock" ('013 Patent claim 1); "clock circuit" ('013 Patent claim 9); "timing circuit" ('095 patent claim 1) [No. 22]**

Maxim	OPs
"real time clock" means "continuously running clock that tracks time" "clock circuit" means "circuitry that tracks time" "timing circuit" means "circuitry that tracks time"	all terms mean "a continuously running hardware circuit that tracks time, and is used to determine the real-world data and time"

The primary dispute between the parties relates to whether the clock terms merely track "time" or require "is used to determine the real-world date and time."

Maxim

Maxim asserts that in the preferred embodiment in order to determine the "true time," the module creates a clock offset that is the difference between the time indicated in the module's real time clock and a reference time known to the service provider. Dkt. 634 at 7-8 (citing '013 Patent at 7:11-18, 13:7-9, 18:38-52; '510 Patent at 10:53-60). Maxim thus asserts that the real time clock merely tracks time and is not necessarily

tracking the true time. Maxim asserts that the real time clock thus does not provide a "true time." Maxim asserts that the "Read Real Time Clock Adjusted" function returns the true time as it adds the offset to the real time clock output. Dkt. 634 at 8 (citing '013 Patent at 26:35-27:4; '510 Patent at 19:45-20:18). Maxim also asserts that extrinsic evidence dictionaries support Maxim's position. Dkt. 634 at 8-9. Maxim seeks broader constructions for "clock circuit" and "timing circuit," asserting that claim differentiation dictates. Maxim asserts that the different terms should have different scope unless the patentee clearly uses the claim terms in the same way. Dkt. 634 at 9 (citing *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374 (Fed. Cir. 2006)). Maxim asserts that the passages at '013 Patent at 2:48-53 and '095 Patent at 2:48-53 indicate that a clock other than a real time clock may be used: "The clock 14 provides timing for the module circuitry. There can also be separate clock circuitry 14 that provides a continuously running real time clock."[6] At the Oral Hearing Maxim also emphasized the passage in the '510 Patent which states "[a] timer 102 may be provided in the module to provide the ability to time stamp transactions performed by the module." '510 Patent at 4:2-4. Maxim asserts that this passage teaches that a general timer as shown in Figure 2 (as opposed to only a real time clock) may be utilized when providing time stamps. Tr. at 83.

Maxim objects that the term "real-world" appears nowhere in the specifications. Maxim asserts that such language would be confusing to the jury. Maxim also objects to OP's construction as it being unclear as to whether the clock is actually used to determine the "real world data and time" or merely capable of such use. Dkt. 651 at 3.

---

[6] Both parties agree that the first use of "14", used in the reference to "clock 14," is an error and that the language should actually be "clock 16." Tr. at 72.

<u>OPs</u>

OPs assert that the parties agree that when combined with the offset the real time clock is used to determine the "real-world date and time" or "true time." Dkt. 642 at 37. OPs assert that the specification teaches that "time stamping" records the "date/time" or the "true time" which OPs assert "both of which are determined by using an offset object that includes the date and time." Dkt. 642 at 37.

As to "clock circuit" and "timing circuit," OPs assert that the claims recite in claim 9 of the '013 Patent that the clock circuit is used for "providing time stamp information" and similarly in '095 Patent claim 1 that the "timing circuit" is used "for generating a time stamp." OPs assert that that the only clock that provides time stamping functionality is the "continuously running real time clock." Dkt. 642 at 38 (citing '013 Patent at 7:45-46, 30:19-20; '095 Patent at 7:46-47, 32:43-44). OPs also assert that extrinsic evidence dictionaries support the conclusion that "time stamping" relates to real time clocks. Dkt. 642 at 38-39. OPs assert that it is not unusual that different terms can "define the exact same subject matter." Dkt. 642 at 39 (quoting *Curtiss Wright Flow Control Corp.* 438 F.3d at 1380). OPs assert that one skilled in the art would recognize that only a real time clock was used to generate the claimed time stamps.

<u>Analysis</u>

The parties agree that a "real time clock" is a continuously running clock. Maxim agrees with OPs that the clocks include circuits. Dkt. 634 at 7, n. 2. Each of the claim terms in question includes "circuit" or "circuitry" except the term of "real time clock" as used in '013 Patent claim 1, yet even in that claim the term is used in the context of

circuitry as reflected by the surrounding claim language. The agreement of the parties is included in the construction.

The parties are also in agreement that it is the output of the clocks in combination with a timing offset that is used to determine a "true time." Tr. at 67; Dkt. 634 at 7-8. There is agreement that the clocks themselves do not necessarily provide the true time but rather software / firmware is utilized with the clocks to provide the true time. Tr. at 77-79. This conforms to the specification which describes that the true time is generated by combining the real time clock reading with the software / firmware offset object. '013 Patent at 2:27-30, 7:11-24, 13:7-9, 17:6-7, 18:38-52; '510 Patent at 2:23-26, 9:19, 10:53-60. As noted in the specification, "the true time can then be obtained from any module 10 by adding the value of the clock offset object to the real-time clock B3." '013 Patent at 7:16-18. As described in the specification, it is the clock offset (the software / firmware object) that is used to create the real world date and time. The specification does not make clear that the clock reading from the clock itself includes a date. OPs' construction does not define the clock itself but attempts to describe subsequent software / firmware processes. Including such descriptions within the "circuitry" would be improper and confusing to the jury.

The final dispute between the parties relates to whether "clock circuitry" and "timing circuitry" must be construed to be the same as "real time clock." Starting with the claim language itself, it is noted that some claims utilize "real time clock" and some claims do not. For example, within the '013 Patent independent claim 1 includes "real time clock" while independent claim 9 includes only "clock circuit." As noted by OPs, the use of different terminology does not mandate different meanings. However, the

different terminology provides some support to Maxim's positions. Maxim further points to the passage at 2:48-53 and 2:64-65 that relate to the system control clock 16. Those passages do not indicate that the time stamping clock is anything but the real time clock 14; however, those passages do indicate that other clocks may provide timing information. Moreover the '510 Patent specification, which is incorporated by reference into each of the '013 and '095 Patents, references a generic timing circuit for use in time stamping with regard to Figure 2. In particular, it is stated that "timer 102 may be provided in the module to provide the ability to time stamp transactions performed by the module." 4:2-4. There is no statement in the '510 Patent that the timer 102 must be a real time clock. There is no teaching that the disclosed real time clock embodiment must be utilized and other timing techniques could not be utilized to create a satisfactory time stamp. Further, OPs do not point to any clear disavowal that establishes that "clock" is limited from its ordinary broader meaning to only a continuous running date and time clock. OPs have not pointed to sufficient disavowal within the specification to mandate this timer to be limited to a real time clock. When considering the claims themselves, the lack of a clear disavowal in the specification, and the more general timer embodiment disclosed in the specification, the intrinsic record as a whole does not mandate limiting the terms to the real time clock embodiments.

It is recommended that "real time clock circuit" means "continuously running clock circuit that tracks time," "real time clock" means "continuously running clock circuit that tracks time," "clock circuit" means "circuitry that tracks time," and "timing circuit" means "circuitry that tracks time."

6. "memory circuitry which can be programmed by a service provider (to enable)" ('013 Patent claim 1) [No. 15]

Maxim	OPs
"memory circuitry which can be programmed by a service provider to enable" means "service provider-programmable memory enabling"	"memory circuitry which can be programmed by a service provider" means "memory capable of being loaded with program(s) by a service provider"

The parties dispute whether the memory circuit must be actually programmed or merely have the capability of being programmed. The parties also dispute whether the programming must be accomplished by the service provider "loading" a program.

Maxim

Maxim asserts that the claim does not limit the manner in which the memory is programmed. Maxim asserts that the claim is directed toward an apparatus and that OPs are grafting a method limitation on to the claimed structure in that OPs require the program to be loaded by the service provider. Dkt. 634 at 17-18. Maxim asserts that the claim language merely requires the memory to be programmed with one or more service provider programs. Dkt. 634 at 18. Maxim asserts that the claim language does not mandate "being loaded" by the service provider or restrict how the programming is placed in memory. Maxim asserts that though the specification describes that the memory be first loaded by the service provider, Maxim asserts there is no disclaimer in the intrinsic record excluding loading by other methods. Dkt. 634 at 19. Maxim asserts that being actually programmed is what "enables said microcontroller …to perform predetermined functions." Maxim cites to *Typhoon Touch Tech., v. Dell, Inc.,* 659 F.3d 1376, 1381 (Fed. Cir. 2011) in which language that stated "memory for storing" required the memory function to be present in the device. Dkt. 651 at 8.

OPs assert that the plain language of the claim is clearly capability language: "can be programmed." OPs cites to *Intel Corp v. ITC,* 946 F.2d 821, 832 (Fed. Cir. 1991) for the proposition that such language only requires capability. Dkt. 642 at 50 (noting the *Intel* claim referred to "programmable selection means" and the court found the structure "need only be capable of operating in the page mode"). OPs assert that *Typhon Touch* related to a term "memory for storing" that the court found requires that the memory function is present in the device.

OPs assert that the claim requires the service provider to load a program. OPs point to the specification in which the embodiment shown has "a Service Provider who loads the module 10 with data to enable it to perform useful functions." '013 Patent at 3:47-49. OPs assert that a fundamental aspect of the invention is for the service provider to control the module's program for security reasons. Dkt. 642 at 50 (citing '013 Patent at 4:53-60, 3:57-61, 9:29-30). OPs assert that they are not grafting a method limitation onto the claimed structure as their construction merely requires a structure that is capable of such programming. OPs assert the claimed requirement is satisfied if the service provider can load a program onto the memory. Dtk. 642 at 51.

Analysis

The language in dispute explicitly includes "can be." Thus the capability aspect is explicitly included in the claim itself. *Typhoon Touch* ("memory for storing"), in contrast, does not include such capability language in the claim itself. The clear language of the claim term at issue here is limited to "can be," capability language.

OPs' use of "being loaded" interjects a limit in the construction to a particular type of programming. The claim merely requires the service provider to program the memory; how that is accomplished is not limited in the claim as long as the memory is programmed by the service provider. As to OPs' argument that a fundamental aspect of the invention is for the service provider to control the module's program for security reasons, such argument does not support limiting the programming to a service provider "loading." For example, the service provider could control the program through other techniques. OPs have not pointed to a disavowal in the specification that would limit the claim language to only "loading."

The construction recommended for "memory circuitry which can be programmed by a service provider to enable" is "memory circuitry capable of being programmed by a service provider to enable."

7. "counter for counting a transaction count" ('510 Patent claim 1); "transaction counter for counting a number of transactions that said apparatus performs" ('095 Patent claim 6) [No. 9]

Maxim	OPs
plain meaning; if construction required: "a counter that counts transactions"	"a hardware circuit maintaining an irreversible count that increments by one each time the module (apparatus) performs a transaction that changes the first data"

The parties dispute whether the counter must be hardware and must be irreversible.

Maxim

Maxim objects that OPs are incorporating a particular embodiment from the specification. Maxim asserts that the claims do not require a hardware circuit counter.

44

Maxim asserts that the '510 Patent and '095 Patent include multiple other claim elements described as "circuits," thus indicating that the counter is not limited to a hardware counter. Dkt. 634 at 44. Maxim asserts that the specification teaches embodiments where the counter is preferably software. Maxim points to the "transaction count object" and the step of "transaction sequence object (counter)" in '095 Patent Figures 4 and 6. Maxim further points to the specification statement "A transaction group 40 is simply a set of objects 42 that are defined by the Service Provider. These objects include…transaction counts…." '095 Patent at 3:58-63; '510 Patent at 6:8:11. Maxim also points to another embodiment which describes a feature "can be programmed into the module 10 by creating…a transaction counter object…" '095 Patent at 13:20-23. Maxim further points to the file history during which an amendment was made to add "a counter" to claim 1 and a different term "counter circuitry" was added to claim 22. Maxim asserts this explicitly recognizes the distinctions between counters and hardware counters. Dkt. 634 at 45 (citing '510 File History JX-4 244MAX001100-102).

Maxim also objects to "irreversible." Maxim asserts that OPs are improperly reading in an embodiment from the specification. Maxim also notes that the specification describes that a counter can be "locked" to provide "an irreversible counter." '095 Patent at 18:18-26; '510 Patent at 10:33-40. Maxim asserts that the fact that the specification describes changing a counter to an irreversible counter indicates that "counter" on its own need not be irreversible. Dkt 634 at 45.

OPs

OPs assert that the claims themselves require a hardware counter. OPs cite to '095 Patent claim 6 which recites that the "transaction counter" is "connected to said

45

microprocessor" and '510 Patent claim 1 which recites "a memory control circuit in electrical communication with…said counter." Dkt. 642 at 34. OPs assert that thus the claims themselves limit the counter to hardware. OPs also cite to the '510 Patent prosecution history statement in which applicants stated: "[t]he transaction counter circuitry is preferably irreversible…" '510 File History JX-4 244MAX1104. OPs also cite to the circuitry examples in the specification such as '510 Patent at Figure 2, 3:66-4:2 and '095 Patent at 13:14-18. As to the transaction counter data object cited by Maxim, OPs assert that the '510 Patent merely teaches that "the portable module 102 contains…a count within its transaction counter." Dkt. 642 at 35 (quoting '510 Patent at 7:21-23).

OPs state that once the transaction counter has been locked it is read-only and provides an irreversible counter. Dkt. 642 at 35 OPs cite to the specification description of locking the counter and assert that for a secure transaction the counter must be locked. Dkt. 642 at 35, n. 30 (citing '510 Patent at 6:53-7:6, 10:33-40 15:49-51). OPs assert that the intrinsic record explains that the counter must be irreversible because the transaction count is intended to "help thwart replay" by providing a mechanism to "insure that the digital certificate…is not a replay." Dkt. 642 at 35 (quoting '510 File History JX-4 244MAX1104 and '095 8:25-28).

OPs further assert that their construction makes clear what the transaction counter counts. OPs assert that the patents teach that the counter counts the number of transactions and the '510 Patent equates the number of transactions to "the number of times certain data in the memory of the module has been changed" ('510 Patent at 3:66-4:2) and similarly the '095 Patent counts "whenever the contents of the memory block are changed" ('095 Patent at 13:14-18). OPs assert that one of ordinary skill in the art would

thus recognize that the counter increments when a particular memory location (*i.e.* the first data) is changed.

Analysis

Claim analysis begins with the claims. The claims at issue explicitly include "circuitry" with reference to certain elements ('510 Patent claim 1: "clock circuit," "input/output circuit," "memory control circuit," "memory circuit," etc. and '095 Patent claim 1 from which claim 6 depends: "microprocessor circuit," "coprocessor circuit," and "timing circuit"). The lack of the use of "circuitry" with regard to the counter terms has relevance. As to OPs' assertions to the claim language of "connected," OPs have not shown that software cannot be connected to hardware in some manner or that software is not typically connected to hardware in some manner. Thus, the claim language supports at least in part Maxim's position. Further, the specification clearly states that features "can be programmed into the module by creating…a transaction counter object…" '095 Patent at 13:20-25. Further the objects 42 (software/firmware shown at Figure 12 and 2:29-30) are described as "these objects 42 include…transaction counts." '095 Patent at 3:58-63; '510 Patent at 6:10-13. Further, '095 Patent includes at Figure 4 step B4 "create transaction sequence object (counter)" and at Figure 6 step D1 "transaction count object." Finally, the file history implies that counters need not be limited to hardware as evidence by the differences between the amendments to claim 1 ("counter") and claim 22 ("counting circuitry"). '510 File History JX-4 244MAX001100-1102. In light of the totality of the claims themselves, the specification and the file history, the record does not limit transaction counter to hardware.

OPs primarily rely upon importing the "irreversible" limitation based upon the disclosed embodiments. Merely because an embodiment is described in the specification does not mandate that embodiment to be included in the claims. *See Arlington Industries, Inc. v. Bridgeport Fittings, Inc.,* 632 F.3d at 1254 ("Even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.") (internal citations omitted). Moreover, the specification language itself implies that "counters" as used in the specification are not inherently irreversible. The specification refers to "counters" and notes that "once a transaction counter has been locked it is read only and provides an irreversible counter." '095 Patent at 18:24-26; '510 Patent at 10:38-40. Even OPs acknowledge that the specification teaches that locking a counter is what makes it irreversible. Thus, the specification explicitly treats "counters" differently from "locked counters" and OPs' construction is more appropriate to "locked counters." *See Phillips,* 415 F.3d at 1314 ("[T]he claim term in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel."). In light of the specification language, the file history quote cited by OPs which only states "preferably" is not a disclaimer to the broader meaning giving in the specification in context of the whole file history statement.

OPs have also merely pointed to the embodiments of the specification which count a particular memory location. However, the claims are clear what is counted such as in '510 Patent claim 1: "a counter for counting a transaction count" and '095 claim 6

"transaction counter for counting a number of transactions." The clear language of the claim controls.

Having rejected OPs' additional limitations to the plain meaning of the term, no further construction is needed for the jury or one skilled in the art.

The construction recommended for "counter for counting a transaction count" ('510 Patent claim 1) and "transaction counter for counting a number of transactions that said apparatus performs" ('095 Patent claim 6) is "plain meaning, no further construction required."

8. "time stamp" ('013 Patent claim 9; '095 Patent claim 1) [No. 28]

Maxim	OPs
'013 Patent: plain meaning; if construction is required: "time stamp information" means "information indicating the time and/or date" '095 Patent: plain meaning; if construction is required: "time stamp" means "indication of the time and/or date"	"record of date and time"

Maxim

Maxim asserts that the term is readily understandable to a jury. Maxim asserts that OPs' construction does not conform to the usage in claims. Maxim points to the context of '013 Patent claim 9: "a clock circuit for measuring time and providing time stamp information responsive to functions being performed by said microcontroller core."   Maxim asserts that inserting OPs' construction in the term "time stamp" in this claim would leave the jury to determine what it means to "provide a record of a date and time."   Maxim asserts that inserting its construction renders the claim to be understandable: "a clock circuit for measuring time and providing information indicating

49

the time and/or data responsive to functions being performed by said microcontroller core." Similarly, Maxim asserts that '095 Patent claim 1 requires a time circuit that generates a time stamp and asserts that Maxim's construction conforms with that surrounding language also. Dkt. 634 at 31.

Maxim asserts that none of the claims require any limitation on the format of the time stamp, yet OPs' construction limits the term to a "record." Maxim asserts that the "Audit Trail" function disclosed in the specification does utilize a record; however ,limiting the term to such an embodiment is an improper incorporation of a specification limitation into the claims. Maxim cites to other embodiments that do not use a record, for example Maxim asserts that the Digital Notary Service embodiment stores a time stamp in a certificate, not a record. Dkt. 634 at 32 (citing '013 Patent at 6:42-7:61 and corresponding passages in the '095 Patent). Maxim makes a similar argument as to the "Software Authorization and Usage Metering" embodiment. Dkt. 634 at 32. Maxim also asserts that "record" cannot mean "storing" as an embodiment is shown in which the time stamp is sent from the portable module in the '510 Patent. Dkt. 634 at 34 (citing '510 Patent at 7:55-60 with regard to the "time stamping data transactions" term discussed below).

Maxim also asserts that "time and/or date" is also proper as the specification discloses a "Postal Metering Service" embodiment in which only the date is used. Dkt. 634 at 33 (citing '013 Patent at 13:54-14:50, '095 Patent at 13:51-14:46).

OPs

OPs assert that in the claims the clock provides the current date and time, which becomes a record of a particular date and time. OPs assert that the specification teaches

that the time stamp is stored in the "audit trail of previous transactions." OPs cite to various portions of the audit trail embodiment to show that the time stamp is a record. Dkt. 642 at 40.

OPs object that under Maxim's construction a wall clock is a time stamp. OPs assert that in the other embodiments cited by Maxim the time stamp is still a record of time. OPs assert that in the notary embodiment the time stamp indicates the document was in fact "presented to the notary on a certain date" ('013 Patent at 7:21-50, 6:49) and in the software usage metering embodiment the time stamp is used to "bind up the true time in the certificate" (''013 Patent at 13:3-9). OPs assert that such examples are thus records of the time.

OPs assert that a fundamental problem addressed by the patents is the prevention of "replay." Dkt. 642 at 42. OPs assert that providing only the date or time would thwart such basic purpose. OPs assert that the patents teach that a time stamp is created with the "true time" ('013/'095 Patent at Figure 4 (B5, B3), 7:12-30, 7:49-50, 30:19-20) which requires both date and time. Dkt. 642 at 42. OPs assert that the "Postal Metering Service" embodiment cited by Maxim is inapplicable as this embodiment generates electronic postage stamps, which are never referred to as time stamps. Dkt. 642 at 42-43 (citing '013/'095 Patent at 13:54-14:50 for showing that the postage stamp includes the plain text of the denomination of the stamp, the date and other information as desired.). OPs further assert that in the postal embodiment, the date is never provided by the circuitry, rather only a hash of the date is provided. Dkt. 642 at 43.

Maxim Reply

Maxim objects to "record" to the extent that "record" means the time stamp must be maintained for future use. Maxim objects that OPs do not define what is meant by "record" and OPs' expert could not define it. Maxim asserts that OPs' expert acknowledged that something could be a record even if it was not stored but only existed "in transit." Dkt. 651 at 10. Maxim expresses concern that a jury may not make such an assumption and is still left with no understanding of what a "record" is limited to. Maxim expresses concern that OPs will assert that to be a record a time stamp must be associated with a data object. Maxim asserts that no support has been provided for such assertions and that the claims do not require the interaction with data objects. Dkt. 651 at 11. Maxim cites to a usage by OPs' expert in a 1993 article in which a time stamp is described as not being recorded for future use. Dkt. 651 at 11.

Analysis

OPs seek to add the term "record" to the claims but do not provide clear guidance as to what "record" means. As noted by Maxim, OPs' construction seems to imply a storing requirement. However, though embodiments such as the audit trail include storing, OPs have not pointed to portions of the intrinsic record mandating storing other than identifying such embodiments. *See Phillips,* 415 F.3d at 1323 (expressly rejecting that claims must be limited to a disclosed embodiment, even if the patent only describes a single embodiment). The surrounding claim language also does not utilize the time stamp terms in the context of requiring a record: "providing time stamp information responsive to functions being performed," ('013 Patent claim 9), "the timing circuit for generating a time stamp," ('095 Patent claim 1) and "time stamping data transactions" (discussed

below with regard to the '510 Patent). Furthermore, Maxim has pointed out embodiments in which the time stamp is information contained within a certificate, a usage that contradicts that the time stamp itself is a record. With regard to '013 Patent claim 9, the claim just states that the "clock circuit…providing time stamp information" and '095 Patent claim 1 just states a "timing circuit for generating a time stamp." Such language is provided in the context of the clock circuit and timing circuit, circuits which in view of the intrinsic record provide information, not necessarily a record. Thus the claim terms more accurately call out information not explicitly a record.

As to the date requirement, OPs point out embodiments in the specification that utilized both date and time information. OPs do not identify language in the specification mandating both date and time. Rather, OPs justify the requirement of both date and time by asserting that without date information the desired prevention of "replay" could not be guaranteed. The Postal Meter embodiment is instructive, though not necessarily for all of the grounds cited by Maxim. The Postal Meter embodiment describes using a PC "in combination with the module 10." '013 Patent at 13:62-64. The PC "prepares" a SALT with is a hash of the data and registration number. This information is then passed on to the module and included in the resulting certificate. '013 Patent at 14:16-20. Verification of the postal metering is performed by the service provider by use of the date information, registration number and hash generation number. '013 Patent at 14:34-38. The "date" in this embodiment is not identified as a "time stamp" and this embodiment does not mention "time stamp." Further it is not clear if the date is provided by the PC or module, let alone whether the date is provided from a timing or clock circuit. Thus, the Postal Meter embodiment does not support Maxim's position that the time stamp of

'013 Patent claim 9 ("a clock circuit for…providing time stamp information") and '095 Patent claim 1 ("the timing circuit for generating a time stamp") is disclosed in that embodiment.

The Postal Meter embodiment is however relevant to OPs' basis for requiring both date and time, namely that various embodiments would not be useful unless both date and time are included to prevent replay. In particular, the Postal Meter embodiment describes a technique in which only a "date" is disclosed. With regard to a replay type fraud, the Postal Meter embodiment makes clear that both time and date are not required:

> [t]he most likely fraud would be duplication, in which a user captures the digital information sent to the printer to produce the postage certificate and makes many duplicate copies of the same certificate. This could be detected easily by the Service Provider simply by reading the hash generation number and unique registration number and looking them up in a database to make sure that the user is not duplicating the certificate.

'013 Patent at 14:41-48. This embodiment contradicts a fundamental assumption asserted by OPs to mandate requiring both date and time information.

"Time" is recited in the terms in question. Further, generally the terms are used in the context of clock, timing, or real time clock circuits (all of which track time as discussed above). As such "time stamp" should include time information. Maxim has not provided support however for a "time stamp" that includes merely date information. Likewise, OPs have not provided support for requiring all time stamps to include a date in addition to time information. The terms require at least time information. Date information may further be included but is not required.

It is recommended that "time stamp information" means "information indicating at least the time" and "time stamp" means "an indication of at least the time."

9. "time stamping data transactions" ('510 Patent claim 1) [No. 29]

Maxim	OPs
plain meaning: if construction is required: "indicating the time and/or date when data transactions occur"	"applying a date and time to a data transaction to create a record"

The primary issues are the same as presented under "time stamp." The parties provide a new argument though as to whether the time stamping is applied to a data transaction.

Maxim

Maxim generally relies on the same arguments as presented above with regard to "time stamp." At the Oral Hearing, Maxim asserted that the use of "applying" introduces ambiguities. Tr. at 159-160.

OPs

OPs assert that in this claim "time stamping" is used in context as a verb and that their construction is consistent with such use. OPs object to Maxim's construction as reading out the object that is time stamped, thus having no requirement that there be something to which Maxim's "indication" is applied. OPs assert that the plain language of the claims is "time stamping data transactions" not a "time stamp for a data transaction." Dkt. 642 at 43-44.

Analysis

The full language of the claim recites "a first real time clock circuit for time stamping data transactions." As noted by OPs, Maxim's construction is a construction more appropriate for what a time stamp is, but the claim explicitly recites "time stamping data transactions." The plain language of the term is directed toward applying a time

stamp to a data transaction. The dispute between "date and/or time" and "data and time" has been addressed above with regard to "time stamp" construction.

It is recommended that "time stamping data transactions" means "applying at least the time to a data transaction."

10. "time stamping a predetermined function" ('013 Patent claim 1) [No. 30]

Maxim	OPs
plain meaning; if construction required: "indicating the time and/or date for a predetermined function"	Indefinite

OPs assert that "predetermined functions" are software programs (an assumption Maxim disputes) and that the specification provides no description of what it means to time stamp a software program.

Maxim

Maxim cites the full claim phrase: "a real time clock, connected to said microcontroller core, for providing a time measurement for time stamping a predetermined function." Maxim asserts that in the context of claim 1, inserting the construction for "time stamping" renders an understandable claim. Maxim asserts that such a usage is supported by the "Digital Notary Service" embodiment. Maxim asserts that the Notary embodiment includes the Service Provider providing a module and that the transaction script provided by the Service Provider combines a time measurement from the clock with a clock offset and appends the "true time" with the other information into the certificate. Dkt. 634 at 57. Maxim further points to the '510 Patent (incorporated by reference into the '013 Patent) as teaching that the time stamp can be used as an indication of whether the portable module is still valid or if the data is

counterfeit. Dkt. 634 at 58 (citing the '510 Patent at 7:55-60). Maxim asserts that this teaches one skilled in the art that the time stamp can be used in conjunction with the transaction script to indicate whether the module is valid. Dkt. 634 at 58.

Maxim asserts that OPs' argument is premised on the false assumption that "predetermined function" means "software program." Maxim asserts that the predetermined function is the functions performed by the software not the software itself. Dkt. 651 at 16. Maxim points to the claim language in which "predetermined functions" is first introduced prior to its usage in the term at issue:

> M emory circuitry which can be programmed by a service provider to enable said microcontroller based secure transaction integrated circuit to perform predetermined functions on behalf of the service provider and for the benefit of an end user…

'013 Patent claim 1. Maxim asserts that the claim states that once programmed, the integrated circuit can perform functions. Maxim asserts that such functions can be, for example, "notary functions," generating messages for commercial transactions, encrypting and sending such messages, etc. Maxim asserts nothing in the specification equates functions to programs. Maxim further states this is clear in dependent claim 2 which states "wherein said predetermined function is an encrypted data transaction." Maxim also asserts that one skilled in the art would read a predetermined function as a function, not a program. Maxim asserts that the phrase in question means apply a time stamp to functions performed by the claimed module, such as stated in claim 2. Dkt. 651 at 16-17.

OPs

OPs assert that "predetermined functions" in the specification are software programs. Dkt. 642 at 60-61 (citing 3:47-56). OPs assert that Maxim appears to agree as Maxim references predetermined functions as "transaction scripts" at Maxim's Br. 57-58.

OPs assert that nowhere in the '013 Patent are predetermined functions (software programs) themselves time stamped. OPs assert that information for particular transactions is time stamped (such as a record, certificate, etc.). Dkt. 642 at 61. OPs assert that the three examples cited by Maxim do not correlate to the claim language which requires "time stamping a predetermined function" itself. OPs assert that the Court should reject Maxim's rewrite of the claim and that the actual claim language results in a nonsensical construction of the claim as a whole. Dkt. 642 at 62.

Analysis

OPs' arguments are premised on the position that "predetermined functions" are limited to software programs. An analysis of the dispute begins with the claim language which states "memory circuitry which can be programmed by a service provider to enable said microcontroller based secure transaction integrated circuit to perform predetermined functions on behalf of the service provider." Such language does not mandate equating functions with software as opposed to the results of the software operations. The claim language in question further supports such an interpretation as the language states "time stamping a predetermined function" and it is not disputed that the results of the various software programs are time stamped in multiple embodiments within the specification. Finally, claim 2 which explicitly recites "said predetermined function is an encrypted data transaction" further supports Maxim's position. The

primary intrinsic record OPs cite for this position is '013 Patent at 3:47-52. The language

in question refers to loading "the module 10 with data to enable it to perform useful

functions…." Such language is not a clear statement that "functions" are software as

opposed to the functions performed by the software. OPs also cite a comparison of

claims 1 and 9; however, claim 9 does not recite predetermined functions. OPs argument

is premised on a function being a program; however, that argument does not conform to

the claims and is not mandated by the specification.

Having rejected the OPs' construction limiting "predetermined functions" to

software programs, the dispute between the parties is resolved. The claim language itself

describes the predetermined functions as functions performed by the secure transaction

integrated circuit so no further construction is needed. "Time stamping" is construed

consistent with the other time stamp / time stamping terms described above.

It is recommended that "time stamping a predetermined function" means
"applying at least the time to a predetermined function."

11. and 12. "transaction program" ('013 Patent claims 9 and 11) [No. 32]
"transaction script" ('095 Patent claim 1) [No. 33]

Maxim	OPs
"series of instructions for performing a secure transaction"	transaction script: "a transaction script is a series of instructions to be carried out by the module (apparatus). When invoked the module firmware interprets the instructions in the script and places the results in an output data object. The actual script is simply a list of objects. The order in which the objects are listed specifies the operations to be performed on the objects"
	transaction program: "transaction script"

The parties focus on a key portion of the specification found in the '095 Patent at 18:8-18 to define transaction script. The parties agree that "transaction program" has the same meaning as "transaction script."

Maxim

Maxim asserts that OPs are reading into the term an entire portion of the specification and that OPs' construction would confuse the jury. Maxim asserts that OPs' construction adds a number of terms not found in the claims including "the module," "the module firmware," an "output data object" and "list of objects" having an "order." Dkt. 634 at 26. Maxim cites to '095 Patent at 18:8-10 (and '013 Patent at 18:14-16): "[a] transaction script is a series of instructions to be carried out by the module." Maxim asserts that the '013 and '095 Patents disclose multiple examples of how a transaction script is used, including secure email, secure digital cash replenishment, secure direct transfer of funds, secure postal metering and secure taxation of transaction volumes. Dkt. 634 at 26. Maxim asserts all of these embodiments are consistent with its construction. Maxim also cites to extrinsic evidence as demonstrating that its construction is consistent with an ordinary meaning to one in the art. Dkt. 634 at 27.

Maxim objects to OPs' inclusion of the entire paragraph at 18:8-18. Maxim asserts that OPs' position relies on an assertion that the patentees acted as their own lexicographer to deviate from the ordinary meaning of the terms. Maxim asserts that to act as a lexicographer there must be "reasonable clarity, deliberateness, and precision" (quoting *In re Paulsen,* 30 F.3d 1475, 1480 (Fed. Cir. 1994). Maxim asserts that such is not present and the sentence at 18:8-10 ("series of transactions to be carried out by the module") describe the ordinary meaning. Maxim also objects to OPs' construction as

importing details from a section described as "Exemplary Object Definition." '095

Patent at 17:45. Maxim asserts such details are clearly "Exemplary." Maxim also notes

that OPs drop the last sentence of the paragraph in question ("[t]ransaction scripts 44

preferably may be as long as 128 bytes"); a sentence Maxim asserts further indicates that

the details of the paragraph are merely exemplary. Dkt. 634 at 28.

OPs

> OPs assert that the passage in question is an express definition:

> A transaction script is a series of instructions to be carried out by the module. When invoked that module firmware interprets the instructions in the script and places the results in the output data object (see below). The actual script is simply a list of objects. The order in which the objects are listed specifies the operations to be performed on the objects transaction scripts 44 preferable may be as long as 128 bytes.

'095 Patent at 18:8-18. OPs assert that the definition provided is not "exemplary" but

rather the objects listed under the heading are exemplary. Thus, OPs assert that a list of

example objects is provided but that objects listed are defined. Dkt. 642 at 52. OPs

assert that their construction conforms to the usage of scripts in the specification, citing to

Figure 11. Dkt. 642 at 52. OPs object to Maxim's construction as being vague, asserting

that it is unclear what "secure" means or what the "instructions" do. Dkt. 642 at 53. OPs

also object that Maxim's construction requires the script to perform the transaction;

however, the '095 Patent at 10:52-58 discusses transaction scripts that can be used after a

transaction has occurred. Dkt. 642 at 53.

Analysis

Both parties agree that a "transaction program" and a "transaction script" carry

the same meaning. As to "transaction script," the parties agree that the language in the

Exemplary Object Definitions ('510 Patent at 10:23-10:34; '095 Patent at 18:8-18) adds

meaning as to the construction but disagree as to the extent. The Exemplary Object Definition for "transaction script" begins with a clear statement that "[a] transaction script is a series of instructions to be carried out…." Such language provides an explicit definition of "transaction script" and such language conforms to what a "program" would be considered to be. The remainder of the specification language cited by OPs provides less of a definition of a script but rather a discussion as to the environment within which the script operates and what happens when the script is run. Such language is less definitional in nature as to what a transaction script itself is and more indicative of details as to a disclosed embodiment. Moreover, the explicit claim language of '095 Patent claim 1 itself provides the details as to what circuitry is storing the script and what is contained within the script. The details of the paragraph cited by OPs thus seem to be an embodiment, and further it is noted that those details address what the module does when the script is "invoked" as opposed to defining a transaction script is. A construction that conforms with the first sentence, "a series of instructions to be carried out," also conforms to the statement in the passage in question that states "the actual script is simply a list of objects" (note the '095 Patent at 3:60-62 describes objects as being data objects and transaction scripts).

The recommended construction for "transaction program" ('013 Patent claims 1 and 9) [No. 32] "transaction script" ('095 Patent claim 1) [No. 33] is "a series of instructions to be carried out as part of a transaction."

13. "transaction group" ('013 Patent claim 11) [No. 31]

Maxim	OPs
"a set of objects defined by a service provider"	"a set of objects that are defined by a service provider and include both data objects and transaction scripts"

The parties dispute whether the transaction group must include data objects.

Maxim

Maxim asserts that the claim language does not require data objects and that the inclusion of "transaction scripts" is redundant as the claim already includes "transaction program" (the parties having agreed that "transaction program" and "transaction script" carry the same meaning). Dkt. 634 at 29. Maxim agrees that the specification describes a group as including both data objects and transaction scripts ('013 Patent at 3:59-64), but asserts that claims should not be restricted to the preferred embodiment "unless the patentee has demonstrated a clear intention to limit the claim scope." Dkt. 634 at 29-30 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys.,* 381 F.3d 1111, 1117 (Fed. Cir. 2004)). At the Oral Hearing, Maxim emphasized that '013 Patent claim 11 states that "wherein each said transaction group can comprise a transaction program created by a service provider." Tr. at 176-177 (noting that the parties agree that a transaction program and a transaction script are the same thing). Maxim asserts that this limitation in dependent claim 11 contradicts OPs' construction.

OPs

OPs cite to the passage in the '013 Patent at 3:56-64:

Each service provider can reserve a block of NVRAM memory to support its services by creating a transaction group 40 (refer to FIGS. 11 and 12). A transaction group 40 is simply a set of objects 42 that are defined by the service provider. These objects 42 include both data objects (encryption keys, transaction counts, money amounts, data/time stamps, etc.) and

transaction scripts 44 which specify how to combine the data objects in useful ways.

OPs assert that this demonstrates that a "group" includes both objects and scripts. OPs assert this conforms to Figure 11 which shows a group 40 as containing both scripts 44 and other objects 42.

Analysis

The term "transaction group" does not appear to carry an ordinary meaning and neither party brings forth evidence that demonstrates the term carries an ordinary meaning to those in the art. Thus, this is not the situation where the patent is asserted to be used as a lexicography tool to change the ordinary meaning. The passage in question provides guidance as to what is a "transaction group." The specification clearly states that a group "is simply a set of objects 42 that are defined by the service provider." '013 Patent at 3:59-61. Thus, the primary sentence makes clear that "transaction group" carries a meaning that is "simply" a set of objects. Having provided a clear ("simple") meaning, the follow on sentence provides examples of what objects include. OPs desire the follow on sentence to be construed such that the objects "must" include the listed items. However in light of the broad, general and "simply" statement of the primary sentence, in context the listing of data objects, transaction scripts, and particular examples of each is merely a provision of examples of objects, not a definition of "transaction group." The passage in question further conforms to the claims themselves as claim 11 states that a transaction group "can comprise a transaction program created by a service provider." Such language would be redundant if OPs' construction is adopted. Thus, the claims conform to the most natural reading of the passage in question.

The recommended construction for "transaction group" is "a set of objects that are defined by a service provider."

14. "store a transaction script, the transaction script including at least a representation of the time stamp generated by the timing circuit" ('095 Patent claim 1) [No. 26]

Maxim	OPs
plain meaning; if construction required: "store [as in 25] a transaction script [as in 33], the transaction script [as in 33] including at least a representation of the time stamp [as in 28] generated by the timing circuit [as in 22]"	indefinite

Maxim

Maxim asserts constructions have been proposed for most of the individual terms within this longer term including "store," "transaction script," "time stamp," and "timing circuit." Maxim asserts that inserting its constructions for the individual terms renders a longer term that is understandable. Dkt. 634 at 59 (citing the '095 Patent at 7:38-56). Maxim points to the Notary and Software Usage embodiments in which the transaction script provided by the Service Provider appends the "true time" to a certificate, and thus Maxim asserts the transaction script includes at least a representation of the time stamp. Dkt. 634 at 59. Maxim also asserts that in some embodiments less than the entire time stamp is utilized, for example the Read Real Time Clock and Read Real Time Clock Adjusted functions do not use the entire timing data but instead only us the "4 most significant bytes." Dkt. 634 at 59-60 (citing the '095 Patent at 28:34-58). Maxim also asserts that in the Postal Metering embodiment only the date is utilized. Dkt. 634 at 61 (citing the '095 Patent at 14:16-28).

At the Oral Hearing, Maxim emphasized that what is stored is a "representation" of the time stamp. Maxim points to a variety of examples in the specification in which a transaction script uses a time stamp. Tr. at 113-116. Maxim cites to the specification passage that states the techniqu "calls on the transaction script 44 to bind the message digest with the true time" and the statement that the decrypted certificate incudes the "true time stamp." '095 Patent at 7:38-53. Maxim notes that the corresponding '095 Patent Figure 5 includes a step C2 "transaction script combines message with other data …creating an encrypted certificate." Maxim also cites to the statement that "the Service Provider creates a transaction script 44 which appends the contents of the input data object to the true time (sum of real time clock 14 and the value of the clock offset object)" and that "the instructions to perform this operation are stored in the transaction group 40 as a transcription group object B5." '095 Patent at 7:21-30. Maxim also points '095 Patent Figure 4 B5 which states "create a transaction script that creates a certificate by combining an input data object with the true time, the value of the transaction counter and a unique number associated to the module, then signs the certificate." Finally, Maxim notes that the specification teaches a transaction group 40 that may have "objects 42 include both data objects (encryption keys, transaction counts, money amounts, data/time stamps, etc.) and transaction scripts 44 which specify how to combine the data objects in useful ways." '095 Patent at 3:60-63.

OPs

OPs assert, similar to the "time stamping a predetermined function" argument, that a script does not include a time stamp. OPs assert that the '095 Patent does not even describe the storing of instructions making up a transaction script along with a time

66

stamp. OPs assert that the '095 Patent instead discloses time stamps stored in an audit trail with identification numbers of the executed script, not the transaction script itself. Dkt. 642 at 63 (citing '095 Patent at 23:46-65). OPs also assert the claim is internally inconsistent as the claim recites instructions to store a transaction script (which are instructions themselves), thus creating an infinite loop of instructions storing instructions:

> ….a second memory circuit connected to said microprocessor circuit, said second memory circuit including instructions readable by said microprocessor circuit to thereby cause said microprocessor circuit to:
> (i) initiate generation of a certificate, said certificate including said challenge number and a second data object; and
> (ii) adjust said first data object according to said second data object responsive to a verification signal from said electronic device;
> (iii) store a transaction script, the transaction script including at least a representation of the time stamp generated by the timing circuit.

'095 Patent claim 1 (numbering added). OPs assert that the patent explicitly prohibits end users from creating "transaction scripts":

> The fundamental concept implemented by the firmware is that the Service Provider can store transaction scripts 44 … to perform only those operations among objects that he wishes the End user to be able to perform…The End User cannot add new transaction scripts 44 and is therefore limited to the operations on objects 42 that can be performed with the transaction scripts 44 programmed by the Service Provider.

'095 Patent at 4:43-57. OPs assert that accordingly a user should not be able to store new transaction scripts during use. Dkt. 642 at 64.

At the Oral Hearing, OPs emphasized that there were four possible ways to interpret the claim language: (1) storing a transaction script where the instructions that comprise the script are somehow time stamped, (2) storing the object ID of a transaction script including a time stamp as in the audit trail, (3) storing a transaction script in a certificate and include a time stamp, and (4) storing a transaction script with includes

67

instructions for outputting a time stamp or a representation of a time stamp. OPs assert that the public could not say that any one of these interpretations or all but one of the interpretations is unreasonable. Tr. at 112. OPs assert that the term therefore does not provide the public notice of its clear meaning and the term is therefore indefinite. Tr. at 112.

Analysis

"Only claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1250 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton*, 514 F.3d at 1249-50.

Maxim provides the more persuasive argument. The claim term clearly recites storing a transaction script and that "the transaction script including at least a representation of the time stamp generated by the timing circuit." The natural reading of this term does not mandate time stamping the script, including a time stamp in an audit trail, storing a transaction script in certificate, etc. as asserted by OPs as the "possible" interpretations. Rather, the claim requires the script to include "a representation of the time stamp generated by the timing circuit." The specification passages cited by Maxim conform to this plain language. Thus, the specification describes scripts that utilize the time stamp when creating certificates. '095 Patent at 7:21-30, Figure 4, 7:38-53, Figure 5.

This also conforms with the specification description that "a transaction script 44 which appends the contents of the input data object to the true time (sum of real time clock 14 and the value of the clock offset object)" and that "the instructions to perform this operation are stored in the transaction group 40 as a transcription group object B5." '095 Patent at 7:21-31. Thus a representation of the time stamp would be expected to be included in these scripts in order to carry out the described operations. The plain meaning of the term matches the disclosures within the specification and the term is therefore not insolubly ambiguous.

It is recommended that "store a transaction script, the transaction script including at least a representation of the time stamp generated by the timing circuit" is definite and that the term needs no further construction other than the individual sub-terms that are construed herein elsewhere.

15. "said combination of said portable module reader and said secure microcontroller performing secure data transfers with said first portable module" ('510 Patent claim 1) [No. 24]

Maxim	OPs
plain meaning: if construction required: "a secure microcontroller based module in electronic communication with said portable module reader performing secure data transfers with the first portable module"	indefinite

The parties dispute whether the term is indefinite for mixing apparatus and method claim limitations as discussed in the *IPXL Holdings, L.L.C. v. Amazon, Inc.,* 430 F.3d 1377 (Fed. Cir. 2005).

OPs assert that claim 1 of the '510 Patent improperly mixes method steps into an apparatus claim. OPs cite to *IPXL Holdings, Rembrandt Data Techs.,* v. AOL, LLC, 641 F.3d 1331 (Fed. Cir. 2011), and *In re Katz*, 639 F.3d 1303 (Fed. Cir. 2011) for the proposition that a single claim cannot recite both apparatus and method limitations. OPs assert that *IPXL* claimed a system that included an input means and then further required "the user uses the input means" and that such a claim was found to be indefinite as it was unclear if infringement occurred when one created the system or when a user actually used the system. Dkt. 642 at 55 (citing *IPXL*, 430 F.3d at 1384). Similarly, OPs assert that the claim in *Rembrandt* listed structural elements of a data transmitting device and then concluded with "transmitting the trellis encoded frames." OPs assert that the same reasons articulated in *IPXL* and *Rembrandt* apply to the term at issue.

OPs assert the claim limitation in dispute cannot be described as merely functional capability of the system because the claim requires the actual step of "performing" the data transfers. OPs note that elsewhere the patentees used language such as "for" performing a function, indicating mere capability of the structure to perform the function, but that no such language is used for the "combination" term. Dkt. 642 at 55.

Maxim Reply

Maxim asserts that a claim that includes language regarding the function or operation of a structure is not necessarily rendered indefinite for "hybrid claiming." Dkt. 651 at 18 (citing *HTC Corp. v. IPCom GmBh & Co., KG,* 667 F.3d 1270, 1277 (Fed. Cir. 2012). Maxim asserts that otherwise nearly every apparatus claim that recites some

function would be subject to an indefiniteness attack. Maxim asserts the standard in *IPXL* is whether the claim creates insoluble confusion as to when the claim is directly infringed – that is whether infringement occurs when the system is created or only when the system is used to perform some act. Maxim notes that *IPXL* found that when the functional language merely describes the "underlying … environment in which the [claimed system] operates" such language does not create confusion and the limitation is not indefinite. Dkt. 651 at 18 (quoting *IPXL,* 430 F.3d at 1384). Maxim asserts the present claim is similar to the claim of HTC in which function steps of "storing," "holding," "maintaining," "causing," and "deleting" operations caused no confusion. Maxim asserts that "performing secure data transfers" is what the "combination" is structured to do and the limitation will be met if the reader and microcontroller are so structured without regard to whether the devices are used. Dkt. 651 at 19. At the Oral Hearing, Maxim also emphasized *Microprocessor Enhancement Corp. v. Tex. Instr. Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008). Maxim asserted that in *Microprocessor* the claim was directed toward a processor and structural limitations of the processor and that claim language that recited structure "performing a Boolean algebraic evaluation of the condition" was found not to be indefinite as the Court found the claim "is clearly limited to a pipelined processor possessing the recited structure and capable of performing the recited functions, and is thus not indefinite under *IPXL Holdings." Microprocessor*, 520 F.3d at 1375.

Analysis

To be found indefinite, a claim must be clearly insolubly ambiguous. *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d at 1250. As noted in *IPXL* the ambiguity that is

in question with regard to mixed claims is whether notice is provided as to whether infringement occurs just by possession of the system or whether actual use of the system is required. *IPXL*, 430 F.3d at 1384 ("[I]t is unclear whether infringement of claim 25 occurs when one creates a system that allows the user to [practice the claimed method step], or whether infringement occurs when the user actually [practices the method step].") The resolution of this question is highly dependent upon the particulars of the claim at issue. A claim in *IPXL* which recited structure and then concluded "and the user uses the input means to…" was found to be indefinite. Similarly in *Rembrandt* listing a device's structural elements and concluding the claim with "transmitting the trellis encoded frames" was found indefinite. In contrast, in *Microprocessor* "performing a Boolean algebraic evaluation of the condition" was found not to be indefinite as the Court found that possession of the recited structure if the structure was capable of performing the functions was the appropriate scope of the claim. *Microprocessor*, 520 F.3d at 1375.

The claim language at issue here is not clearly insolubly ambiguous. The surrounding claim language makes clear that capability of the recited "performing" is what is claimed. The claim calls out "a system" which includes three main components: "a first portable module," "a portable module reader," and "a secure microcontroller" (with additional limitations provided for each of these components). The claim further makes clear the relation of these elements. The claim language recites a "portable module reader that can be placed in communication with said first portable module." Such language makes clear that capability of communication with the portable module is the focus of the claim, not actual performance of communication. It is in this context, that the final claim limitation recites a combination of said portable module reader and

said secure microcontroller "performing secure data transfers with said first portable module." Reading the claim as a whole, the claim is not clearly insolubly ambiguous as the claim is directed toward a system in which the portable module reader "can be" in communication with the portable module and the capability of performing data transfers is accordingly the disclosed scope of the claim. Having resolved the conflict that the claim term does not require actual performance of the secure data transfers but merely capability, the term requires no further construction.

It is recommended that "said combination of said portable module reader and said secure microcontroller performing secure data transfers with said first portable module" is definite and that the term needs no further construction other than its plain meaning.

16. "responsive to a verification signal from said electronic device" ('095 Patent claim 1) [No. 23]

Maxim	OPs
"in response to a message that can be verified as authentic"	indefinite

Maxim

Maxim asserts that although the term "verification signal" does not appear in the specification, an express definition is not required in the specification so long as the meaning of the term is "fairly inferable from the patent." Dkt. 634 at 65 (quoting *Bancorp Services, LLC v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004). Maxim asserts that the complete claim language of relevance is "adjust said first data object according to said second data object responsive to a verification signal from said electronic device." Maxim asserts that there are multiple examples in the specification of

such a limitation. Maxim cites to the example of Figure 10 as described in the '095 Patent at 11:48-12:34. Maxim asserts this embodiment provides a Payer and Payee and that the Payer and Payee exchange a random SALT that is used to prove authenticity. Maxim asserts that a comparison of a received SALT to one that was sent allows a Payer to confirm that the Payee is legitimate before withdrawing funds. Dkt. 634 at 65-66. Maxim cites to other examples such as "if the numbers are the same then the transaction that was requested may be deemed secure and thereby proceeds" ('095 Patent at 1:58-65), "the payer proves to the payee that the certificate is not a duplicate or replay and is therefore authentic" ('095 Patent at 8:20-42), "if the SALT matches, the money amount is extracted," ('095 Patent at 10:52-58) and "if the SALTs agree, the Payee adds the amount of the purchase to its balance G4" ('095 Patent at 11:30-35).

Maxim further asserts that the originally filed claims in the '702 Patent (the parent to the '095 Patent) further support Maxim's construction. Maxim notes that such claims had a step (h) of "comparing said random number with said decrypted random number and determining if they match in said module" and step (i) "adding said decrypted amount requested to a money register in said module." Maxim also cites to an originally filed claim (claim 12) in the '720 Patent, a patent which the '095 Patent incorporates by reference. Dkt. 634 at 67. Maxim asserts that all such embodiments teach one skilled in the art a construction that corresponds to Maxim's construction. Dkt. 634 at 66-67 (citing Tygar Decl.).

OPs

OPs assert that "verification signal" appears nowhere in the specification. OPs also assert that the claim language is unclear as to whether it refers to (1) a signal from

74

the electronic device that has yet to be verified (and is thus to be verified by the microprocessor) or (2) a signal that has already been verified or (3) a signal to the microprocessor that something else (other than the signal itself) either is to be verified or has been verified. Dkt. 642 at 58-59. OPs assert that these are all very different things and the specification does not provide guidance as to which possible meaning is correct. OPs also object to the term "verification signal" as it does not identify what is verified, how it is verified or when it is verified. Dkt. 642 at 59.

OPs object that Maxim has rewritten the term to remove the "signal" component as Maxim's "in response to a message that can be verified as authentic" does not include the signal requirement claimed. OPs also assert that the concept of verifying authenticity appears nowhere in the claims and cannot be added by Maxim. Dkt. 642 at 59. OPs also state that Maxim's construction does not establish if the signal has already been verified or is to be verified.

OPs assert that the SALT embodiments are not relevant because no SALT transmission results in an adjustment of the "first data object" as claim 1 requires. OPs further state that the specification does not equate "verification signal" with "certificate" and that claim 1 expressly distinguishes those concepts by separately reciting the "generation of a certificate." Dkt. 642 at 60. OPs assert that the specification fails to teach expressly or through inference a verification signal. OPs therefore assert that the claim fails to reasonably apprise one as to the meaning of that term. Dkt. 642 at 60.

Analysis

The term in question resides in the claim in the context of "adjust said first data object according to said second data object responsive to a verification signal from said

75

electronic device." It is in this context that the claim term at issue should be viewed. All parties agree that the patent does not provide explicit language of a "verification signal."

At the Oral Hearing, it became clear that Maxim interprets "verification signal" to be a message that may be verified as authentic which then permits the transaction to proceed. Tr. at 130-131. The more ordinary meaning of the term on its face, a signal indicating something has been verified, was not addressed by Maxim. Though Maxim is correct that *Bankcorp* allows a claim to include terminology missing from the specification, such terminology must be "fairly inferable from the patent." *Bancorp.*, 359 F.3d at 1373. In this case, "verification signal" is not.

As explained at the Oral Hearing, for its construction Maxim primarily relies upon the "message" of Maxim's construction being sent to the user in Figures 8 and 10. For example, Maxim asserts that the transmission from Figure 8 block F4 (bank / service provider side) to block F5 (user side) is the relevant message and similarly the transmission from Figure 10 block H2 (merchant / payee side) and H3 (user / payor side) is the relevant message. Maxim asserts that it is these message transmissions that correspond to "responsive to a verification signal from said electronic device." Tr. at 135-137. Maxim asserts that these messages may then be used by the user to confirm the transaction is authentic. In particular, Maxim asserts that the claim language "adjust said first data object according to said second data object" is then carried out in Figure 8 block F5 and Figure 10 block H4 in response to the message sent between blocks F4 and F5 (Figure 8 embodiment) and H2 and H3 (Figure 10 embodiment). *Id.*

Block F5 provides that what is sent from the Bank/ Service Provider is "checked" and "if the ID number and random SALT number is unchanged then add the cash…."

Similarly, Block H4 provides that what is sent from the Merchant / Payee is subject to a "compare" operation with the original payer SALT and "if they are the same subtract amount of money." It is clear from these embodiments that the adjustment is not responsive to what is transmitted (the transmission between blocks) as asserted by Maxim but responsive to the "compare" and "check" operations in blocks F5 and H4. Merely transmitting a message from one entity to the other is not what the adjustment is responsive to. Thus, a more natural interpretation of a verification signal would be a signal that is indicative of the result of the compare or check operations. The use of the term "signal" in the claim rather than "message" further supports such a view as it could be inferred from the specification that the check and compare operations would create some signal. This interpretation matches the steps (h) and (i) as recited in the '702 Patent claim 1 referenced by Maxim. In step (h) it is the comparing in the module (user side) that determines a match ("comparing said random number with said decrypted random number and determining if they match in said module"). The subsequent step (i) then adds the amounts. Thus, the '702 Patent (the parent to the '095 Patent) also supports an interpretation that the verification signal would be a signal that results from the comparison process.

Further creating ambiguity with regard to the claim is that Maxim acknowledged at the Oral Hearing that the "message" Maxim is construing to be relevant is "typically" contained in the certificate. Tr. at 137. The certificate is claimed separately in the claim: "said certificate including said challenge number and a second data object," and the claim does not link the verification signal to being included in the certificate. This other claim language runs counter to Maxim's construction also.

Thus, Maxim's interpretation of a term that is absent from the specification cannot be "reasonably inferred" from the specification as the specification does not support Maxim's construction and to the extent something can be inferred from the language surrounding the claim term, such inference contradicts Maxim.

However, the ambiguity does not end there. The claim term in question recites "a verification signal from said electronic device." As described above with reference to the embodiments cited by Maxim, the verification signal would be created on the user side and not the electronic device side. Thus, though reasonable to infer the "verification signal" to be the signal which results from the "check" and "compare" operations, such an interpretation does not conform to the "from said electronic device" language of the claim.

The parties have presented multiple possible interpretations of a term "verification signal," a term not contained in the specification. However, when viewed in context of the claim language these interpretations cannot be inferred from the specification as the specification does not conform to the possible interpretations. The patentee elected to utilize claim language not found within the specification. Further, an inference as to the proper meaning from the specification leads to multiple interpretations, each problematic and providing inconsistencies. The standard required by *Bancorp* has not been satisfied and the claim term is insolubly ambiguous.

It is recommended that "responsive to a verification signal from said electronic device" is indefinite.

17. "substantially unique electronically readable identification number" ('510 Patent claim 1) [No. 27]

Maxim	OPs
"an electronically readable number that is sufficiently uniquely to identify the portable module from any other portable module"	indefinite

The primary dispute centers upon the meaning of "substantially."

Maxim

Maxim asserts that "substantially" is used often in patent claim drafting and cites to a number of Federal Circuit cases in which "substantially" has been found to be sufficiently definite in uses such as "substantially equal," "substantially absence," "not interfering substantially." Dkt. 634 at 62-63 (citing a variety of Federal Circuit cases). Maxim asserts that in the context of the intrinsic record one of skill in the art would understand the term relates to a number that is sufficiently unique to identify the module from any other portable module. Dkt. 634 at 63.

Maxim asserts that the specification repeatedly discloses that the portable module may have a unique number and then states "the identification number preferably uniquely identifies the portable module from any other portable module." '510 Patent at 4:7-9. Maxim notes that the identification number is used to authenticate a module and that the number is included in a transaction to help authenticate the transaction. Dkt. 634 at 63-64. Maxim asserts that no finite series of numbers can be expected to remain entirely unique; however, one of skill in the art would recognized that the number "preferably uniquely identifies the portable module from any other portable module." '510 Patent at 4:7-9. Maxim asserts that its construction provides guidance to a jury to make a determination as to whether a given identification number is "substantially unique."

OPs

OPs assert "substantially unique" is indefinite. OPs assert that a number is either unique or it is not unique. OPs cite to a Board of Patent Appeals case that found "substantially unique from any other spreading code" to be indefinite. Dkt. 642 at 56. OPs assert that the term in question is not a case of where "substantially" is used to introduce degree or magnitude, which the Federal Circuit has found permissible. OPs cite to Federal Circuit cases which state that when a "'word of degree' is used, the court must determine whether the patent provides 'some standard for measuring that degree.'" Dkt. 642 at 57 (quoting *Biosig Instruments, Inc. v. Nautilus, Inc.*, 715 F.3d, 891, 898 (Fed. Cir. 2013). OPs assert that Maxim is merely rewriting the claim term without support from the specification and that Maxim has merely replaced "substantially" with the equally ambiguous term "sufficiently." Dkt. 642 at 58.

Analysis

"Only claims 'not amenable to construction' or 'insolubly ambiguous' are indefinite." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1250 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton*, 514 F.3d at 1249-50. The specification provides guidance that absolutely uniqueness is not required. Rather in the specification the identification number is described as unique enough to be distinguished from other modules. In particular, the specification states that

"the identification number preferably uniquely identifiers the portable module from any other portable module." '510 Patent at 4:7-9. In this context, the specification thus provides criteria for one skilled in the art to determine if an identification number is substantially unique.

It is recommended that "substantially unique electronically readable identification number" means "an electronically readable number that is sufficiently unique to identify the portable module from any other portable module."

18. **"certificate" ('095 Patent claim 1) [No. 3] "signed certificate" ('702 Patent claim 1) [No. 40]**

Maxim	OPs and Joining Parties[7]
"certificate" means "authentic message" "signed certificate" means "encrypted authentic message"	OPs: "an electronic document that is encrypted, or digitally signed, using a public or private key to attest that data came from its claimed source and was not altered" Joining Parties: "certificate" means "an electronic document equivalent to cash"

OPs' original construction required a certificate to include the limitation of a "document equivalent to cash." The Joining Parties ("JPs") continue to assert a construction that includes "cash" while the rest of the OPs asserted the modified construction presented above in their responsive claim construction brief. As to OPs' new construction, the primary dispute is whether all certificates must be signed. At the Oral Hearing, Maxim agreed to the following constructions proposed by the Special Master: "certificate" means "an electronic document that has indicia to attest that it is

---

[7] Joining Parties are Bank of the West, Comerica, Inc. and BMO Harris Bank National Association

authentic" and "signed certificate" means "an encrypted certificate." Tr. at 142. At the Oral Hearing OPs objected to the Special Master proposed constructions for not requiring both terms to include encryption and the use of public or private keys.

Maxim

Maxim states that "a certificate is an 'authentic message' – a message that has indicia to ensure that it is authentic." Dkt. 634 at 19. Maxim asserts this conforms to the other claim language that indicates a certificate includes a challenge number (Maxim asserts a challenge number is referred to as a SALT and the specification teaches that a SALT is used to prove "that the certificate is not a duplicate or replay and is therefore authentic" ('095 Patent at 8:28-43)). Dkt. 634 at 19-20.

As to "signed certificate" as used in the '702 Patent, Maxim asserts that its construction is consistent with the claim in that the claim recites a packet that includes a random number and then "encrypting" the packet "thereby creating a signed certificate." Dkt. 634 at 69. Maxim objects to OPs' construction as providing the same meaning to "certificate" and "signed certificate." Maxim asserts that the claims define when a certificate must be signed by some claims using "certificate" and some claims using "signed certificate." Dkt. 651 at 9. Maxim points to specification language that indicates that all certificates are not necessarily signed such as where the specification states that the module "then signs the certificate" by encrypting it. Dkt 651 at 10 (citing '095 Patent at Figure 4 Step B5)

Maxim also objects to OPs' inclusion of "and was not altered." Maxim asserts that this confuses two concepts – authenticity of the identity of the device and authenticity of the transaction. Maxim asserts that a certificate can authenticate a device

82

but not necessarily a transaction. Maxim asserts that authenticity of a transaction relates to replay and there is nothing inherently in a signed certificate that prevents replay. Maxim asserts other measures must be utilized for prevention of replay. Dkt. 651 at 9.

Maxim also objects to the inclusion of "equivalent to cash." Maxim points to claim differentiation and '095 Patent dependent claim 7 which includes "base monetary amount" and "transaction monetary amount," thus indicating that independent claim 1 is not limited to cash equivalents. Maxim points to the specification which indicates data objects are not limited to money and can be for example "units of time rather than the actual dollar amount." '095 Patent at 12:42-54.

Maxim asserts that the "cash" construction of JPs limits the term to the Digital Cash Dispenser embodiment and improperly excludes the Digital Cash Replenishment and Software Authorization and Usage Metering embodiments. Maxim asserts that this improperly limits the term to an application of the certificate as a monetary instrument, not to what a certificate is: a challenge number and data object. Dkt. 634 at 21-22.

Maxim asserts that even in the Digital Cash Dispenser embodiment there is disclosed a broader context of "certificate." In particular, Maxim points to Figure 7 elements E3-E5 in which a merchant sends a certificate that contains only the purchase price and a SALT. '095 Patent at Figure 7, 9:41-49. Maxim asserts that a merchant merely sending a "purchase price" is not "an electronic document equivalent to cash." Dkt. 634 at 22. Maxim asserts that other monetary transaction embodiments include applications in which the certificate is not limited to cash. Dkt. 686 at 4. For example, Maxim points to the Registry With Guaranteed Private Key Security embodiment ('095 Patent at 15:65). Maxim asserts that the point of this embodiment is that the module does

not have electronic cash as "there is no provision in this model for the module 10 to represent money independently of the registry maintained by the Service Provider." '095 Patent at 16:6-9.

As to the other embodiments, Maxim cites *In re Katz*, 639 F.3d, 1303, 1324 (Fed. Cir. 2011) for the proposition that there is a strong presumption against a construction that excludes disclosed embodiments. With regard to the Software Embodiment, Maxim asserts that the specification teaches that the data object is not limited to money but instead could be "units of time rather than the actual dollar amount." '095 Patent at 12:45-49. Maxim also asserts that a "cash" construction also excludes embodiments in which a certificate authenticates a module. Dkt. 634 at 23 (citing '095 Patent at 32:35-50).

Maxim also asserts that the claims themselves recite what the contents of a given claimed certificate include, pointing to '095 Patent claim 1 which recites "said certificate including said challenge number and a second data object" and '702 Patent claim 1 which states that the signed certificate is an encrypted first data packet (the first data packet being created by combining the random number and said amount requested). Dkt. 686 at 1-2; Tr. at 150-151.

Maxim further notes that passages that JPs cite as defining the "invention" indicated that non cash applications are relevant: "the module can be configured to provide at least secure data transfers or to authorize monetary transactions" ('095 Patent at 1:23-38) and "encrypted technique so that money and other valuable data can be securely passed electronically" ('095 Patent at Abstract).

OPs

        OPs assert that Maxim's construction conflates an "authentic message" with a message used to authenticate. OPs assert that its construction matches the ordinary meaning of "certificate," citing to Webster's New World Dictionary of Computer Terms. Dkt. 642 at 44-45. OPs assert that each of the multiple disclosed embodiments describe a certificate that is encrypted or digitally signed with a key. Dkt. 642 at 45 (citing numerous specification passages and Stubblebine Declaration). OPs assert that the specification teaches that private/public key encryption is how a "certificate" is authenticated. Dkt. 642 at 45. At the Oral Hearing, OPs cited to steps E4, and E8 of '095 Patent Figure 7, step F4 of '095 Patent Figure 8 and step G2 of '095 Patent Figure 9 as each providing language indicating that a signed certificate is created by encrypting a data packet. OPs also emphasized at the Oral Hearing that claim differentiation is less relevant between claims when the claims at issue are each independent claims.

        OPs object that Maxim's construction is overbroad in that not every authentic message need be a certificate. OPs assert that under Maxim's construction a handwritten note would be a certificate – conflating data that is authentic with a "certificate." OPs assert that a certificate attests that the data came from the claimed source. Dkt. 642 at 46-47.

JPs

        JPs seek a construction of "an electronic device equivalent to cash." JPs assert that the Field of Invention states that "the present invention relates to … transferring money or its equivalent electronically." JPs also that claim 1 only reads on the embodiments involving the transfer of digital money. Dkt. 680 at 2-3. Thus, though

other embodiments may be disclosed, JPs assert claim 1 is only related to monetary or equivalent transactions. JPs assert that Maxim's claim differentiation arguments are not proper because dependent claim 7 does not narrow "certificate" but rather narrows "first data object" and "second data object." Dkt. 680 at 4.

JPs also assert that the purchase price arguments are related to Figure 7 and thus are not relevant because the "certificate" of claim 1 does not read on the merchant certificate in step E4 of Figure 7. More particularly, JPs assert that the merchant certificate does not include a challenge number. Dkt. 680 at 5.

As for the "units of time" argument presented by Maxim, JPs assert that such argument is not relevant because the specification makes clear that "units of time" are a "money object" and thus equivalent to money. Dkt. 680 at 5 (citing '095 Patent at 12:45-48).

Analysis

As for the "cash" issue maintained by JPs, it is instructive to start with the claim language itself. Here the claims provide limitations as to what the particular certificates are comprised of, thus providing support to Maxim's construction. For example, '095 Patent claim 1 states "said certificate including said challenge number and a second data object." Similarly '702 Patent claim 1 requires that the signed certificate is an encrypted first data packet, the packet first being created by combining the random number and said amount requested. To the extent the particular items of a certificate are agued to be related to cash or monetary equivalents, those terms are addressed specifically herein with regard to other terms. Moreover, Maxim has pointed to the Software Authorization embodiment within the specification in which certificates are utilized in a manner that is

not limited to a document that is equivalent to cash but rather utilized with regard to amounts of time. '095 Patent at 12:45-59. Even within the Digital Cash Dispenser embodiment a "certificate" is disclosed that is not a cash equivalent. Figure 7 elements E3-E5 show that a merchant sends a certificate that contains the SALT, module ID number and purchase price information. '095 Patent at Figure 7, 9:41-49. This certificate sent from the merchant to the user is not an equivalent of cash. Furthermore, the use and application of a certificate may vary between embodiments but that does not mean the basic term "certificate" has a different meaning for every embodiment. In the context of the claims and the specification, "certificate" is not limited to a document equivalent to cash.

OPs point to numerous instances in the specification where it is stated that a "signed certificate" is created by encrypting data. It is instructive that the specification refers to "signed certificates." Such language itself implies that "certificate" alone does not mean "signed." *See Phillips,* 415 F.3d at 1314 ("[T]he claim term in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel."). Similarly, usage in the specification in which a certificate is created and then said to be signed indicates that a "certificate" itself does not inherently mean a signed certificate: "create a transaction script that creates a certificate by combining an input data object with the true time, the value of the transaction counter, and a unique number associated to the module, then signs the certificate." '095 Patent at Figure 4, B5 (emphasis added). As used in the specification "certificate" does not itself reference a signed certificate, but rather "signed certificate" references a signed certificate.

The recommended construction for "certificate" is "an electronic document that has indicia to attest that it is authentic" and the recommended construction for "signed certificate" is "an encrypted certificate."

19. "challenge number" ('095 Patent claim 1) [No. 4]

Maxim	OPs
"a random number used to authenticate a message"	"a random number that a first party generates and sends to a second party, and then receives from the second party as part of its response so that the first party can compare the received number to the sent number to ensure they match in order to validate the response"

The parties dispute the inclusion in the OPs' construction of the various limitations related to the actions of the first party and second party.

Maxim

Maxim asserts that the disputed additional language sought by OPs incorporates method limitations into the apparatus claim. Further, Maxim asserts that the limitations sought by OPs though included in some embodiments disclosed in the specification, improperly excludes other disclosed embodiments. In particular, Maxim asserts that the Postal Metering Service embodiment allows for receiving a challenge number, referred to as a SALT. Maxim asserts that in this embodiment the personal computer generates a SALT and the module receiving the SALT generates the certificate. The certificate is printed in a barcode on an envelope. Maxim asserts that importantly the Service Provider checks the barcode for authenticity, not the personal computer that originally provided the SALT. Dkt. 634 at 24-25 (citing '095 Patent at 13:50-14:46). Maxim asserts that this usage is excluded from OPs' construction as in this case the party that sent the challenge number is not the same party that receives and compares the number.

OPs

OPs assert that the challenge number concept is taught in the '095 Patent to prevent "'replay" or duplication. '095 Patent at 8:25-30. In particular, OPs assert that only the portion of the specification referencing "challenge number" is with reference to the Digital Cash Dispenser embodiment which further states:

> A random number is sent and used in challenge/response mode. The other party is challenged to return the random number as part of their response.

'095 Patent at 8:30-34. If the returned number is "the same as the one he provided" ('095 Patent at 8:35-38) then the first party knows that "the certificate is not a duplicate or replay and is therefore authentic" ('095 Patent at 8:39-42). OPs assert a random number is not a "challenge number" unless it is used in a challenge mode. OPs assert that its construction conforms to the claim which states "an input/output interface for receiving a challenge number from an electronic device." OPs assert that in OPs' construction the electronic device is the "first party" and the apparatus is the "second party."

OPs object that Maxim's construction reads out of the term the "challenge" concept. OPs also assert that Maxim's construction improperly limits the construction to message authentication. Maxim asserts that arguably five of the six examples in the '095 Patent relate to using a challenge number to approve a transaction while only one example arguably relates to message authentication. Dkt. 642 at 32-33.

As to the Postal Metering Service embodiment, OPs assert that the SALT is not a challenge number. First OPs assert that the particular SALT is not a random number, citing the '095 Patent at 13:49-14:46. Even if considered random, OPs assert that the

SALT is sent by a first party (the PC program) to a second party (the module) and then received from the second party as part of its response so that the first party can compare the received number to the sent number. Dkt. 642 at 33 (citing the '095 Patent at 14:12-17).

Analysis

Maxim's construction appears to ignore the "challenge" concept that is described in the specification. In particular, Maxim's construction is missing the concept that a party receiving the number is "challenged to return the random number." Maxim argues that the Postal Meter embodiment does not conform with OPs' construction; however, the Postal Meter embodiment still includes the challenge concept – that a hash number is sent and the receiving party is challenged to include the hash number in some response (the arguable difference being that the party sending the number is not who reviews the number as asserted by Maxim for the Postal Meter embodiment). '095 Patent at 14:12-35. The recommended construction conforms to the meaning given "challenge number" in the specification: "[a] random number is sent and used in challenge/response mode. The other party is challenged to return the random number as part of their response." '095 Patent at 8:30-33. As to whom the response is sent to or analyzed by, such actions don't define the basic meaning of "challenge number" and the recommended construction would thus still be applicable to the Postal Metering embodiment while retaining the challenge concept. At the Oral Hearing, OPs stated agreement to the recommended construction. Tr. at 165.

The recommended construction for "challenge number" is "a random number that is sent from a first party and received by a second party, the random

number allowing the second party to indicate authenticity of the response by including the random number in a response."

20. "storing" ('880 Patent claim 1; '510 Patent claim 1; '095 Patent claims 1 and 5; '013 Patent claim 9); "store" ('095 Patent claim 1) [No. 25]

Maxim	OPs
plain meaning; if construction required; "placing into memory"	"saving in long-term memory for future use"

The primary dispute relates to OPs' inclusion of "long-term."

Maxim

Maxim asserts that "storing" is readily understood to those in the art. Maxim asserts that the claims do not include any temporal restriction on the length of time of the storing. Maxim asserts that OPs' construction further creates a new dispute as to what qualifies as "long-term." Maxim notes that the specifications ('013 Patent at 18:63-67, '095 Patent at 19:3-8 (same), '880 Patent at 109:55-59 (same)) describe "an input data object is simply an input buffer…The hosts uses input data objects to store date." Maxim asserts it is well known that "buffers" are used for temporarily saving information. Dkt. 634 at 36, n. 5. Maxim asserts that OPs' construction excludes this embodiment. Maxim asserts that OPs' construction does not make sense in light of the usage in the '510 Patent which includes "memory for storing a first data" and "an energy circuit for storing energy." Maxim asserts that the energy storage limitation would be nonsensical if replaced with OPs' construction.

OPs

OPs assert that the specifications describe embodiments that can be used in multiple transactions and that the "present invention" is described in the specifications in

this context. OPs assert that if information was not stored in long-term memory, the entire purpose of the invention would be lost.

OPs assert that the specification states that "the fundamental concept implemented by the firmware is that the Service Provider can store transaction scripts 44." '013/095 Patent at 4:45-50. OPs note that the firmware is stored in long term memory "ROM memory 22." '013/095 Patent at 3:27-30. OPs assert that if not stored in long term memory this "fundamental concept" would be lost. As to storage of "value datum" and "first data," OPs point to the storage as being NVRAM (non-volatile RAM) 24." '880/510 Patents at 5:44-46. OPs assert that as stated in the Summary of Invention the portable module can be "carried by a consumer," "filled with electronic money," and "debited by a merchant." '880/'510 Patents at 1:60-2:4. OPs assert if the module cannot store the data for future use it would be impossible to use the claimed invention. Dkt. 642 at 24.

OPs assert that the patent distinguishes the module's long-term memory that stores valuable information from the short-term "scratchpad memory":

> The portable module 102 comprises a memory 202 that is preferably, at least in part, nonvolatile memory for storing and retrieving vital information pertaining to the system to which the module 102 may become attached to. The memory 202 may contain a scratchpad memory which may act as a buffer when writing into memory. Data is first written to the scratchpad where it can be read back. After data has been verified, the data is transferred into the memory.

'880/510 Patents at 3:57-65 (*see also* '013 Patent at 22:60-61; '095 Patent at 23:47-48).

OPs assert that Maxim's construction would encompass any type of storing and that short term storage would not achieve the "present invention's" stated purpose. As to the buffers, OPs assert that the specification portion cited to by Maxim uses the buffers

for sending and receiving data from the "ROM memory 22" which is long-term memory. Dkt. 642 at 25 (citing '013 Patent at 3:26-30; '095 Patent at 3:25-29).

<u>**Analysis**</u>

OPs acknowledge in their arguments above that the patents teach long term and short term storing. It is instructive that in such a context the claims did not make any such limitation but rather merely recite "storing." Further, though OPs cite to Non-Volatile RAM 24 recited at '880 5:44-46 as indicative of long-term storing, the end of that same paragraph states that "one of ordinary skill will understand that there are many comparable variations of the module design. For example volatile memory might be used, …." '880 Patent at 5:58-61. OPs have not pointed to any claim limitation or statements in the specification that short-term memory is not also "storing." OPs merely rely on general statements that the concepts trying to be achieved would not work with short term storage. OPs state "the fundamental concept implemented by the firmware is that the Service Provider can store transaction scripts 44." '013/095 Patent at 4:45-50. But OPs have not shown in the intrinsic record how such a concept excludes all storing but long-term storing. OPs have not pointed to a clear disavowal of all storing and as such the specification descriptions which include storing other than long-term storing counsel against the limitations sought by OPs.

The recommend construction for "storing" is "plain meaning, no construction necessary."

21. "adjust said first data object according to said second data object" ('095 Patent claim 1) [No. 1]

Maxim	OPs
plain meaning; if construction required; "change a first data object by the amount of a second data object"	"change the first data object by adding or subtracting the second data object to/from the first data object"

The parties dispute whether "adjusting" requires adding and subtracting.

Maxim

Maxim asserts that OPs' construction conflicts with the preferred embodiments. Maxim asserts that the specification teaches that data objects are adjusted by rewriting them with new values, not by adding or subtracting a number. Dkt. 634 at 48. Maxim cites to the Write Object command which states: "[i]f the object has not been locked or privatized the module will clear the objects previous size and data and replace it with the new object data." '095 Patent at 25:39-41. Maxim asserts that even where the new value for a data object results from addition or subtraction, the data object itself is changed by replacing the original value with the new value.

OPs

OPs assert that the term "adjust" only appears with reference to the Real Time Clock Adjusted firmware definition. OPs assert that in that definition the "module adds the clock offset to the current value…." '095 at 28:62-65. OPs assert that the specification provides numerous discussions of addition or subtraction. Dkt. 642 at 16. OPs assert Maxim's construction is unclear and the only evidence Maxim cites relates to programming a module, not adjusting data objects.

Analysis

OPs cite to the use of "adjust" in the specification with reference to adding the clock offset. The citation provided by OPs does not arise to a disavowal of the plain

94

meaning of the term "adjust." Moreover, the use of "adjust" in the claim term at issue is unrelated to the clock offset. In the claim the use of "adjust" is with relation to the first data object being adjusted according to the second data object, objects that are separate from the claimed time stamp. As OPs' argument to limit "adjust" to only addition and subtraction operations has been rejected, no further construction is necessary.

The recommend construction for "adjust said first data object according to said second data object" is "plain meaning, no further construction required."

22. "passing" ('880 Patent claim 1) [No. 20]

Maxim	OPs
plain meaning; if construction required; "sending"	"transferring"

Maxim

Maxim objects to the use of "transferring," asserting that "transferring" implies that a value is not only sent but also deleted from the sending end of the system. Dkt. 634 at 52. Maxim asserts that OPs are relying upon the use of "transferring" in the preamble and that it is improper to find the preamble to be limiting absent contrary requirements in the claim or specification. Dkt. 634 at 53-54. Maxim asserts that the claims do not requiring the extra bookkeeping step of storing on one end and deleting from the initiating end. Maxim asserts that the claim language merely recites passing and notes that when the claim requires storing the claim used such language as "storing," which is utilized in step (g) of the claim. Dkt. 634 at 53.

OPs

OPs assert that the term "passing" does not appear in the specification. Rather, OPs assert that the specification repeatedly uses the term "transferring." OPs cite to the Title of the Invention and the descriptions of Figures 1, 4 and 5 as all describing "transferring" valuable data or information. Dkt. 642 at 16   OPs also assert that the example of section II.A is entitled "Transferring Units of Exchange Out of a Portable Module 102" and section II.B is entitled "Transferring Units of Exchange Into the Portable Module 102." '880 Patent at 7:12-8:29, 8:30-9:16.

OPs also assert that the ordinary meaning of "passing" means "to move or be transferred from one place to another." Dkt. 642 at 16, n. 17 (quoting Webster's Third New Int'l Dictionary). OPs also assert that "Maxim's argument that 'transferring' requires 'storage' and 'deletion' should be rejected because 'transferring' does not necessitate 'storage' and 'deletion.'" Dkt. 642 at 17.

Analysis

The primary dispute raised by Maxim in the briefing related to what is the meaning of "transferring" and whether "transferring" requires deleting and storing data. At the Oral Hearing, Maxim and OPs agreed that "transferring" does not mandate deleting and storing. Tr. at 166-167. OPs, however, have not articulated how the scope of "passing" and "transferring" differs. OPs correctly note that the specification uses transferring. However, OPs have not identified intrinsic evidence mandating a reason to change the plain claim language of "passing" to "transferring." As such, particularly in light of the lack of identification of a meaning of "passing" that the intrinsic evidence rejects, the actual claim language is most appropriate.

The recommend construction for "passing" is "plain meaning, no further construction required."

23. "packet" ('702 Patent claim 1; '510 Patent claim 3) [No. 39]

Maxim	Starbucks/Groupon
plain meaning; if construction required: "a unit of data"	Briefing and Joint Claim Chart: "a block of information that is transmitted within a single transfer operation from one party to another" New Construction Proposed at the Oral Hearing: "a block of information that is assembled for transmission from one party to another."

The original dispute centered upon whether a packet must be transferred in a single operation. S/G presented a new construction at the Oral Hearing that did not contain the single transfer operation limitation. Tr. at 169-170.

Maxim

Maxim asserts that the claims do not include any requirements that the data values in the packet must be transferred from one party to another. Maxim asserts that the specification and claims merely treat a "packet" as a block of data. Dkt. 634 at 47 ('702 Patent at Figure 10, 7:23-34, 9:29-50, 11:15-12:27, 15:55-16:7, 19:34-60). Maxim asserts that there is no teaching in the specification that "packet" is used in the context of packet switching, TCP/IP packets, or other formats. Further, Maxim asserts that the specification teaches that multiple packets may be used for a transaction ('702 Patent at 12:21-24) and the claims merely call out "a" packet which indicates that the claimed packet may be one or more packets. Dkt. 634 at 47.

S/G

S/G assert that '702 Patent claim 1 describes communicating 'a first data packet" from an electronic device to a module. Dkt. 642 at 67. S/G assert that the communication process provides the first data packet to the electronic device as a result of the claimed communication process of communicating the certificate. S/G assert that accordingly the first data packet is transmitted in single transfer operation. *Id.*

S/G assert that the specification also supports their construction as each embodiment teaches a block of data created and transferred (or is encrypted and transferred) from one party to another. Dkt. 642 at 67-68 (citing numerous specification examples). S/G also cite to extrinsic evidence from an IEEE dictionary related to "packet." Dkt. 642 at 69. At the Oral Hearing (slide number 225), S/G asserted that claim differentiation between '510 Patent claim 1 ("first data") and claim 3 (first data is a packet of encrypted data") further supports its position.

Analysis

At the Oral Hearing Maxim agreed to a construction of "a block of information." Tr. at 168. The context of the claim language provides strong guidance as to this claim term, guidance as to if transmitting is required and guidance as to where / what are transmitted is provided in the claims themselves. *See Phillips*, 415 F.3d at 1314 ("[T]he context in which a term is used in the asserted claim can be highly instructive."). Contrary to S/G's assertions '702 Patent claim 1 explicitly recites "creating a first data packet," and "encrypting said first data packet with a first key thereby creating a signed certificate" and then "communicating said signed certificate from said electronic device to said module." Thus, the packet is encrypted to create a certificate and the certificate is

communicated. When required, the claims themselves provide the details as to what is communicated and to where the communication is provided.   As to '510 claim 3, a construction of packet to mean "block of information" would conform to the doctrine of claim differentiation as claim 3 would thus require the first data to be "a block of information of encrypted data." Such a construction provides differentiation over claim 1 which merely calls out "first data."

The recommend construction for "packet" is "block of information."

24. "money register" ('702 Patent claim 1) [No. 43]

Maxim	Starbucks/Groupon
"representation of money or some other form of credit"	"locked money object maintained in the module, containing a digital cash value"

Maxim

Maxim asserts that the term relates to "a data structure on a device representing money or some other form of credit." Dkt. 634 at 73. Maxim cites to the exemplary object definitions provided in the specification where it is stated that a "money register" is "used to represent money or some other form of credit." '702 at 18:13-15; *see also* 17:7-13, 18:39-41. Maxim asserts that S/Gs' construction improperly imports the "locked" limitation from embodiments disclosed in the specification.   Maxim also asserts that the meaning of "locked" is not defined. Maxim asserts that the specification does not teach that the term "money register" is limited to a locked register. Dkt 634 at 73-74.

S/G

S/G assert that the specification defines "money register" as locked. S/G cite to "the fundamental concept of the digital cash purse as implemented in the module 10 is

that the module 10 initially contains a locked money object containing a given cash value…" ('702 Patent at 7:63-66) and:

> Money Register   The money register object is preferably 4 bytes in length and may be used to represent money or some other form of credit. Once this object has been created, it must be locked to prevent a user from tampering with its value. Once locked the value of this object can be altered only by invoking a transaction script. A typical transaction group 40 which performs monetary transactions might have one script for withdrawals from the money register and one for deposits to the money register.

'702 Patent at 18:13-21.   S/G asserts that Maxim ignores this mandate from the specification.

Analysis

The key passage cited by all the parties is '702 Patent at 18:13-21. It is noted that the beginning of the passage provides definitional language of "money register" itself: "the money register object is preferably 4 bytes in length and may be used to represent money or some other form of credit." It is noted that the rest of the passage makes clear that a "money register" is not inherently locked as only after a money register is created is the register later locked, and even then it can still be changed as a transaction script may alter the value. S/G's construction is thus overly narrower with regard to "locked" as the specification indicates that a money register is not inherently locked. Further, the explicit language of "or other form of credit" that is contained in the specification contradicts S/G's attempt to limit the term to "digital cash."

The recommend construction for "money register" is "an object that is used to represent money or some other form of credit."

25 (a). "amount requested" ('702 Patent claim 1) [No. 37]

Maxim	Starbucks/Groupon
plain meaning; if construction required: "a requested amount"	"a requested monetary equivalent amount"

Maxim

      Maxim asserts the plain meaning is clear. Maxim also points to the claim itself which describes storing the amount requested in the "money register." Maxim asserts that the "money register" is described in the patent as "used to represent money or some other form of credit." '702 Patent at 18:13-15. Maxim asserts that the term is clear and adding "monetary equivalent" just adds confusion.

S/G

      S/G asserts that the context of the claim establishes that the amount requested is a monetary equivalent. S/G cites to the preamble and the language regarding "adding … to a money register." Dkt. 642 at 66. S/G also cites to the specification in which the amount added is described as "amount of money to be added" in the digital cash replenishment embodiment. '702 Patent at 10:17-43.

Analysis

      In context of the full claim language, the monetary limitations of the claim and a construction of those limitations are more relevant to the "money register" limitation. "Money register" is construed above in the context of money or some other form of credit. That term provides the necessary context to the claim. The term "amount requested" requires no further construction.

      The recommend construction for "amount requested" is "plain meaning, no further construction required."

25(b). "decrypted amount requested" ('702 Patent claim 1) [No. 41]

Maxim	Starbucks/Groupon
plain meaning	"a decrypted version of the amount requested"

At the Oral Hearing Maxim agreed to "a decrypted version of the amount requested." Tr. at 174-75.

The recommended construction for "decrypted amount requested" is "a decrypted version of the amount requested."

26. "adding said decrypted amount requested to a money register" ('702 Patent claim 1) [No. 42]

Maxim	Starbucks/Groupon
plain meaning; if construction required: "increasing the amount of a money register by the amount requested"	Briefing and Joint Claim Chart: "performing the mathematical addition operation to sum the decrypted amount requested and an existing digital cash value of the money register" New Construction Proposed at the Oral Hearing: "summing the decrypted amount requested and an existing value of the money register."

The primary issue regarding this term is whether the term requires a summing of two numbers or whether merely increasing the value is sufficient. S/G proposed a new construction at the Oral Hearing. Tr. at 172.

Maxim

Maxim asserts that the only term at issue is "adding" since "decrypted amount requested" and "money register" are construed elsewhere. Maxim asserts that the term is used in its ordinary meaning and matches the specification digital cash replenishment

embodiment where "the money amount is extracted from the packet and added to the value of the money object in the module F5." Dkt. 634 at 72 (quoting '702 Patent at 10:48-49). Maxim asserts that S/G's construction burdens "adding" with extensive additional language that the intrinsic record does not support and that the jury does not need to understand the term.

Maxim objects further that S/G's construction departs from the ordinary meaning of "adding" and is also misleading. Maxim asserts that in the context of the claim, the phrase does not merely describe adding two numbers. Rather Maxim asserts the specification repeatedly describes changing the value of the money register citing to: "add the cash amount to the money register" ('702 Patent at Figure 8 F5), "add money amount to payee money register" ('702 Patent at Figure 10 H7). Maxim asserts that the value stored in the money register will be increased by the requested amount, not simply that the numbers are added. Dkt. 634 at 73.

S/G

S/G assert that the issue is whether the term requires performing the mathematical addition operation to sum two numbers or whether merely increasing the value is sufficient. S/G assert that the plain language requires adding to mean performing the mathematical addition operation. S/G assert that the Applicants chose to use the claim term "adding" rather than a broader term encompassing all forms of increasing value. S/G assert the claim language is ordinary and clear. Dkt. 642 at 70-72. S/G assert that each disclosed embodiment describes adding an amount to a money object of the module. Dkt. 642 at 71 (citing numerous passages of the '702 Patent). OPs assert that the passages cited by Maxim all still recite "adding," such as Figure 8 with recites "add the

cash amount to the money register." S/G assert all embodiments require addition, thereby supporting the requirement of addition. S/G further assert that dictionaries support "to find the sum" and "to perform addition." Dkt. 642 at 72, n. 70 and 71.

Analysis

The claim term in question is "adding… to a money register." As asserted by S/G with regard to S/G's construction of "money register" and adopted herein, "money register" is an object. The money register is not the digital value but rather the object that is used to represent money or some other form of credit. In this context, the use in the claim language of "adding" is not used in the context of adding two numbers. The claim explicitly calls out adding an amount to an object (the money register). In this context, decrypted requested amount is added to the money register, not to a particular number or value in the register. Mandating an addition operation of two particular numbers is not in conformance with the more broad language of the claim in which the amount is merely added to the register. This context matches descriptions in the specification which "add the cash amount to the money register of the module" ('702 Patent at Figure 8 F5) and "add money amount to payee money register" ('702 Patent at Figure 10 H7) are used. These operations are described more in the context of adding money to an account, not adding money to a particular number that represents the existing value in the account.

The recommend construction for "adding said decrypted amount requested to a money register" is "increasing the amount of a money register by the decrypted amount requested."

27. "placing the module in communication with the electronic device" ('702 Patent claim 1) [No. 36]

Maxim	Starbucks/Groupon
plain meaning; if construction required: "initiating communication between the module and the electronic device"	"invoking communication between the module and the electronic device by a user"

The parties dispute whether the user must cause the communication.

Maxim

Maxim asserts that the language of the term is non-technical and easily understood. Maxim asserts that S/G's construction conflicts with the claims and specification and does not even conform to the OPs' construction for the "portable module reader that can be placed in communication with …" term. Dkt. 634 at 70. Maxim asserts that '702 Patent claim 1 makes no mention of user and does not place any restriction on how or by whom the module is placed in communication. Maxim further asserts that the specification provides embodiments in which the Service Provider initiates communication as well as user initiated communications. Dkt. 634 at 70 (citing '702 Patent at 10:18-53, 11:6-41, Figure 9, 11:45-12:28).

S/G

S/G asserts that the specification teaches that data is loaded onto the module to perform useful functions invoked by the user. Dkt. 642 at 65 (citing '702 Patent at 3:29-38). S/G asserts that the specification is clear that the user is in control of the module. S/G asserts that the verb "placed" requires some positive action to initiate communication.

<u>Analysis</u>

The claim language in question merely states "placed" and does not imply anything as to who or what does that action. The rest of the claim language does not include "user" at all. S/G attempts to read into the claims an embodiment of the specification. However, S/G has not pointed to any language of disavowal in the specification mandating only action by the user for placing the devices in communication. Furthermore, specification illustrates embodiments in which a merchant or service provider may initiate the communication between the module and the electronic device. For example, as shown in Figure 9 (Transfer From User's Module to Merchant's Module), the merchant appears to send the first electronic communication and thus "the Merchant calls on a transaction script 44 in the Payee." '702 Patent at Figure 9, 11:13-16.

The recommend construction for "placing the module in communication with the electronic device" is "plain meaning, no further construction required."

28. "Microcontroller core" ('510 Patent claim 1; '013 Patent claims 1 and 9) [No. 17]

Maxim	OPs
Plain meaning; if construction is required: "a processor"	"a central processing unit contained within a microcontroller"

The parties provided minimal briefing regarding "microcontroller core" and did not present the term for argument at the Oral Hearing. Maxim asserts that that one skilled in the art would know the term relates to a processor and that the term is not limited to a central processor unit. Dkt. 634 at 41. Maxim asserts that in context of the claims this processor is merely a different processor from the claimed coprocessors

("math coprocessor" and "modular exponentiation accelerator circuit"). OPs assert that it is well known that a microcontroller contains a CPU. OPs assert that Maxim's "processor" would arguably encompass any logic circuitry anywhere. Dkt. 642 at 49.

<u>Analysis</u>

Maxim's construction is void of the microcontroller concept of the claim term. OPs have not pointed to intrinsic evidence limiting all microcontrollers to a central processing unit. Even OPs' extrinsic evidence does not suggest that every microcontroller must have a central processor unit. Dkt. 642 at 48, n. 57 (one reference stating merely "typically" and another reference not referencing a central processor unit in one definition).

The recommend construction for "microcontroller core" is "a processor unit contained with a microcontroller."

29. "monetary equivalent" ('702 Patent claim 1) [No. 35]

Maxim asserts the term is found in the preamble and thus not a claim limitation. S/G asserts the term is a limitation. Though originally Defendants proposed a construction of "digital cash" (Dkt. 580-1 at 36), Maxim and S/G agree that if the term is a limitation then a plain meaning for "monetary equivalent" is proper.

<u>Maxim</u>

Maxim asserts that "monetary equivalent" is only found in the preamble of '702 Patent claim 1 and is thus not a limitation. Maxim asserts where the preamble merely states the purpose of a method claim and the limitations of the claim form a "structurally complete invention," the preamble is not limited. Dkt. 634 at 68 (quoting *Rowe v. Dror*,

112 F.3d 473, 478 (Fed. Cir. 1997)). Maxim also asserts that the other exception to normal exclusion of a preamble is when the preamble "breathes life and meaning into the claim." Dkt 634 at 68 (quoting *Loctite Corp. v. Ultraseal Ltd.,* 781 F.2d 861, 866 (Fed. Cir. 1985). Maxim further asserts that even if the term was a limitation it does not need a construction as the plain and ordinary meaning would be to refer to a value equivalent to a monetary amount. Maxim asserts that "digital cash" does not clarify or help the jury understand the meaning. Dkt. 634 at 68.

S/G

S/G agree that no construction is needed and will allow the plain meaning of the term to control. S/G assert that the preamble is limiting because it explains the nature of the data transferred in the claim. Dkt. 642 at 64 (citing Catalina *Mktg. Int'l. v. Coolsavings.com, Inc.,* 289 F.3d 801, 808 (Fed. Cir. 2002). S/G also assert that the preamble provides antecedent basis for the use of "module" in the body of the claim.

Analysis

Ordinarily a preamble does not form a limitation of a claim. A preamble may however form a limitation where it "breathes life and meaning" into a claim. *Loctite Corp. v. Ultraseal Ltd.,* 781 F.2d at 866. Terms in preambles have been found to be limiting where the preamble provides antecedent basis to the claim terms. *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003). In the claim in question, the preamble calls out "adding a monetary equivalent to an electronic module." Later the claim recites that the module is in communication with the electronic device and "indicating an amount requested to said electronic device." Finally, the claim ends with "adding said decrypted amount requested to a money register in said module."

Thus, the antecedent basis of the "electronic module" is in the preamble in the context of "adding a monetary equivalent to an electronic module." In addition, in context of the claim as a whole which calls out unspecified "amounts" but at the end of the claim states the amounts are added to "a money register," the use of "monetary equivalent" provides life and meaning to the the claim. In light of the antecedent basis and the context of the whole claim, the term is properly considered a limitation. As to the construction, the parties agree no construction is needed. Thus, the term is not limited to "digital cash" as the plain meaning would encompass a value equivalent to a monetary amount not just digital cash.

The recommend construction is that "monetary equivalent" is a limitation of the claim that is construed to mean "plain meaning, no further construction required."

Respectfully submitted,

/s/ Richard D. Egan
Richard D. Egan
Special Master

1101 South Capital of Texas Highway
C-200
Austin, TX 78746
Phone: 512-347-1611
Facsimile: 512-347-1615